MARCH, 1947

Industrial FINISHING

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Industrial FINISHING

W. H. ROHR, Editor P. C. BARDIN, Associate Editor

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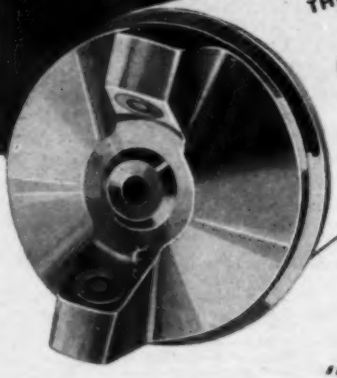

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Lots of Paint Needed—A billion-dollar painting spree embracing more than 13,000,000 tenants and home-owners will restore nearly $3,000,000,000 to war-depreciated property values this year and arrest development of slum areas, according to Grover M. Hermann, president of the American-Marietta Co.

Amplifying figures compiled by a half-dozen industry and government agencies, and by his own nation-wide paint manufacturing concern, Mr. Hermann said, "The 40,000,000 dwelling units in this country have an average deterioration of at least $100 or a total of $4,000,000,000 because of wartime paint and labor shortages. Painting and redecorating of 13,450,000 residential units, or one-third of the country's total, would add to the value of these units $2,690,000,000 during 1947."

* * *

Rigidized Metal—Something new—a texturized all-metal grille—has been added to radio design by the Rigid-Tex Corp. of Buffalo. This new grille, appearing on the postwar Bendix radio, is Rigidized and perforated metal, oxidized and high-lighted to match or contrast with any cabinet.

In the Bendix model the lower instrument panel portion of the grille is solid but has been Rigidized for texture beauty. The grille proper has been perforated in addition to Rigidizing to permit free passage of sound.

In addition to unusual and lasting beauty, the Rigidized metal panels offer approximately the same structural strength as any other part of the cabinet, thus eliminating much accidental damage in shipping or handling, and is actually more resistant to deflection and impact than a similar gauge solid sheet of the same metal.

* * *

Expanding for Future—Based on a real bright outlook for industrial capacity to supply a goods-starving world, the DoAll Co. of Des Plaines, Ill., has harnessed its resources and consolidated its sales and administrative offices in sweeping moves planned for the future. Commenting on the necessity for this expansion program, Mr. L. A. Wilkie, Chairman of the Board, says:

"Vast, world-wide depletion of goods and industrial equipment has made adequate replacement impossible for many years to come. In addition to the natural replacement needs based on pre-war standards, the present pyramiding demand for more and better goods goes far beyond industry's capacity. Since present manufacturing facilities are inadequate to meet this unprecedented demand, much goods-producing machinery is needed; to

(Continued on page 10)

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make it, great numbers of machine tools—the machines that make other machines—are required first of all."

* * *

Natural Resins Again—"For all practical purposes, Singapore gums are again in production, although prices are roughly 75% above those which prevailed before the war," says a trade circular on natural resins addressed to members of the Paint, Varnish & Lacquer industry.

Singapore exports damar, pale East India, Batu, black East India and Pontianak gums assembled from other points in the East.

Encouragement is also seen in gum production in the Dutch East Indies and the Philippine Islands, although those areas are reported as slower than Singapore in recovering from the upset of the war. In the Belgian Congo, New Zealand and Australia, production of gums continued through the war and products from these sources are expected to continue to be available.

* * *

American Rubber—A strong plea for prompt and appropriate action, taken at the law-making level, to make sure that America shall never again "become a 'have-not' nation with respect to rubber," is made by John L. Collyer, president of The B. F. Goodrich Co. and chief prewar exponent—as early as June, 1940—of American-made rubber as a preparedness measure.

In a pamphlet entitled "Remember December Eleventh," just issued. Collyer points out that on that date in 1941 America's World War II Rubber famine began—

with cessation of general sale of auto tires—and that "we should Remember the Rubber Famine" as well as "Remember Pearl Harbor" in keeping alert to national security needs.

* * *

3-Mile Paint Job — The Triborough Bridge in New York, which including its approaches spans and viaducts, is approximately three miles in length, is receiving two coats of aluminum paint which, the New York Herald Tribune says, will produce the same effect "as a woman changing from mud-spattered slacks to a silken gown, although the basic purpose is protection of the metal.

Rust spots have been scraped and then coated with red lead before application of the two coats of aluminum paint. The first coat of aluminum is tinted a bluish color, but the final coat will have the pure sheen of aluminum. The big job will cost nearly $600,000.

* * *

Furniture Shows — Three important markets, Chicago, New York and Grand Rapids have passed into history. A single description may be applied to all three: Buyers cool, with good prospects of becoming colder. Mild resistance becoming stronger. This is unmistakable evidence of a return to a buyers market. It is authoritatively reported that buyers consistently passed up case goods and bedroom suites produced with shadowy improvements, but clear cut increases in price from 20% to 50%. For the first time in six years quality in furniture became a deciding factor. Some manufacturers who still thought anything goes came away with fewer orders. *(See page 136)*

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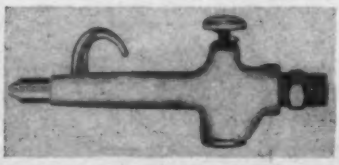

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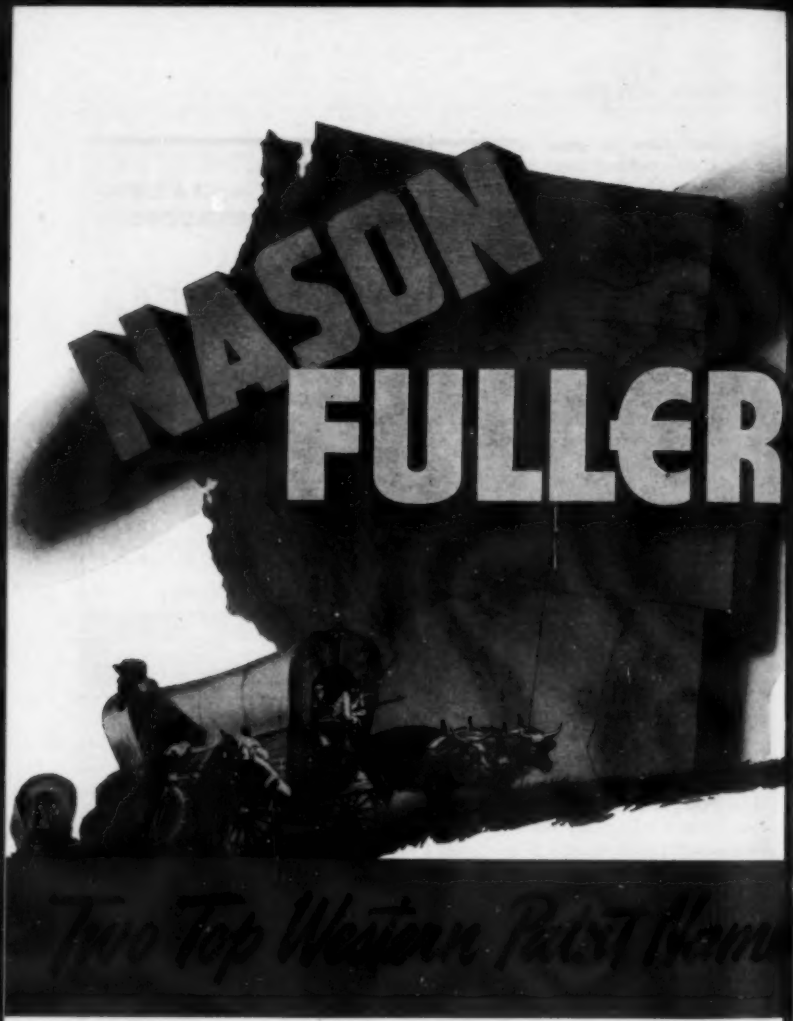

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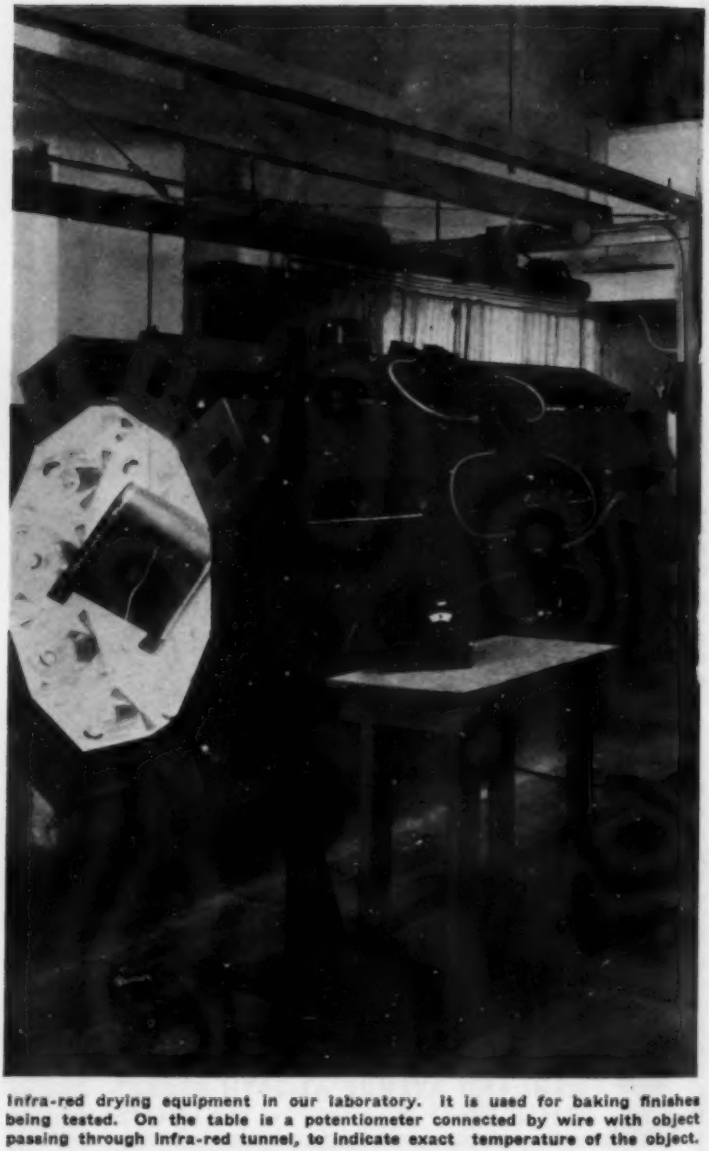


Infra-red drying equipment in our laboratory. It is used for baking finishes being tested. On the table is a potentiometer connected by wire with object passing through infra-red tunnel, to indicate exact temperature of the object.

Infra-Red Drying of Paint Materials

Experienced paint chemist tells why your drying setup must be properly adjusted to your baking materials, and vice versa, to give results that will be economical and satisfactory. Why some infra-red drying setups do not give the results that are expected.

By RAYMOND C. ADAMS

Technical Director
Gilman Paint & Varnish Co.

IN THIS ARTICLE I have no intention of discussing the relative merits of infra-red drying of paint coatings, nor do I plan to compare infra-red drying with convection oven drying in a way which might indicate that I prefer one over the other. *I am not a heating engineer, but a paint chemist. My interest is chiefly in the performance of bake finishes for the paint user. Naturally the results that a user of industrial finishes gets when he bakes these coatings depends upon the formulation of the materials and his baking setup.* If his baking setup isn't just right or isn't being used properly, the best finishing materials will likely give disappointing results. Paint chemists, therefore, are concerned about paint drying setups.

Since infra-red drying is relatively new to a number of people, I have found some individuals who have misconceptions as to what it is and what it will do. Some of these misconceptions, in turn, manifest themselves into paint problems and it is in this connection that I plan to discuss the subject.

Some people are mystified by the manner in which infra-red drying is accomplished. They are accustomed to convection oven baking schedules of from 15 minutes to two hours, at varying degrees of temperature. With infra-red, the drying time is shortened considerably. There are those who think that it is simply a matter of the rays from the infra-red lights falling upon the painted surface that accomplishes the drying. Of course, such an idea is erroneous. For practical purposes the drying of a paint film under infra-red is similar to the drying that takes place in a convection oven.

Enamels That Dry by Oxidation Only

Essentially, there are two main classes of baking enamels. There are 1) those enamels that dry by oxidation, and 2) those that dry by a combination of oxidation and polymerization. The process of oxidation is one in which oxygen in the air combines with the oil component of the vehicle to form a solid film. The time required for oxidation to take place varies with the type of vehicle and the temperatures. *(To page 34)*

Baking enamels contain vehicles that tend to oxidize rapidly, especially when heat is applied. Normally, the higher the temperatures, up to about 300° to 400° F., the shorter the drying time. Since some pigments discolor at temperatures above 175° F., and also since some vehicles discolor (give a yellow cast to white enamel) at certain temperatures, the optimum temperature at which any enamel can be baked must first be determined experimentally. At the same time we determine how long the enamel must be baked at that temperature to complete the oxidation reaction.

Other Enamels Dry by Polymerization, or . . .

The second type of baking enmel is relatively new, having been first introduced when urea formaldehyde resins were made available. Urea formaldehyde resins and melamine resins, which have been since introduced, dry by polymerization. Oxygen is not necessary to the polymerization reaction. Heat is required to convert the liquid film into a solid film. The optimum temperature for this reaction is 300° to 325° F.

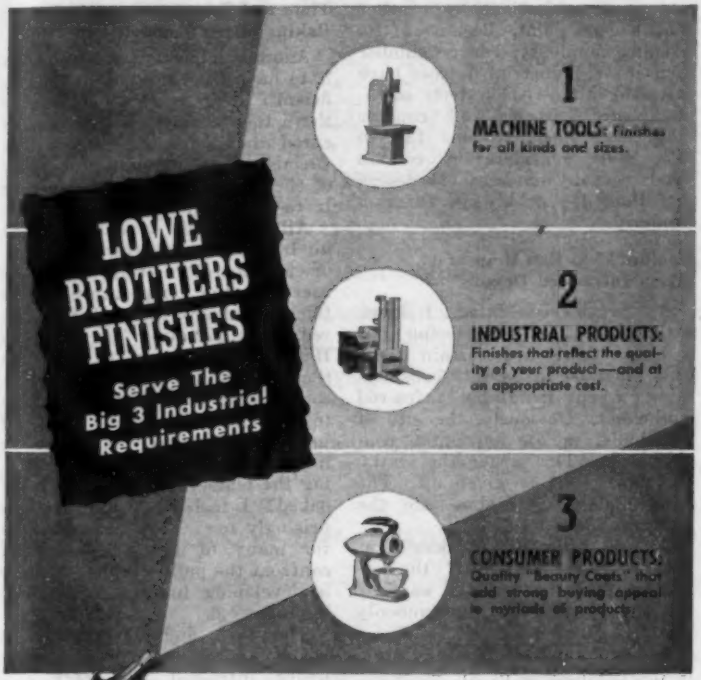
Normally, temperatures below 225° F. cannot be employed with the urea formaldehyde resins, or below 200° F. for the melamine resins. However, under certain conditions, where a catalyst is used, the temperature can be materially lowered. The time required for the polymerization reaction at 300° F. is much shorter than for the oxidation reaction, being only a few minutes. At lower temperatures, the time is correspondingly longer. Because the films formed by polymerization are so extremely hard and brittle, when making commercial baking enamels a mixture of vehicles is generally used so that *the enamel dries both by polymerization and oxidation.* The comparative softness of the oxidizing portion of the film acts as a plasticizer for the hard brittle polymerized portion.

Regardless of Which Oven, Heat Produces Baking

There are several different sources for the heat energy required to bake enamels. The time and temperature at which any given enamel will bake is theoretically the same for the different types of heat sources. *The reason why it takes less time to bake with infra-red is because it takes less time for the object that is being painted to reach the required temperature. Regardless of what the temperature of the oven or air is, it's the temperature of the paint film that determines how long the enamel is required to bake.*

With convection ovens, the time required to bring the temperature of the paint film up to the desired point is longer than with infra-red. This preliminary heating-up period has very little to do with the baking of the film of enamel. With infra-red, a temperature of say 300°F. can be reached in two or three minutes, thus saving all the preliminary time required in the convection oven. The time required at top heat is the same for both types of drying.

Infra-red drying is not without its limitations—and it is some of these that I have in mind taking up in connection with drying bake enamels. The equipment for infra-red drying is readily available from several sources and it is not too expensive. Actually this is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somewhat objectionable, rather than a good point. Because of its seeming simplicity, a large number of users of industrial finishes have installed infra-red systems without the assistance of capable engineers. Such systems fail to take into consideration certain fundamental matters of design and thus do not always function properly.

Factors That Can Help or Harm Infra-Red Drying

As previously stated, I know little about heat engineering, but I know there are certain facts that must be taken into consideration when installing infra-red equipment. Obviously, the size of the bulbs is an important consideration. The larger the watts the more heat is given off. The most widely used sizes are the 250 and 375-watts.

A second important consideration is the distance of the reflectors from the painted surface. A distance of 12-in. is commonly used.

A third important consideration is the elimination of air currents. It doesn't take much of a draft to make a substantial difference. In this connection, in our laboratory we have two banks of infra-red lights that are each 55-in. high and 88-in. long. These banks have end plates which serve to reduce air currents. A number of times I have had a panel or object in the center of these two banks of lights, with 375-watt bulbs, and with all windows and doors closed; and I have made the temperature of the test panel or object, as indicated by a potentiometer, fluctuate considerably by simply waving my hand at the end and on the outside of the banks of lights.

Time and Temperature Govern Baking of the Enamels

Another important consideration is to have the banks of lights sufficiently long so as to make sure that the enamel is thoroughly cured when it reaches the end. This variable alone accounts for many of the problems that come up with infra-red drying.

All convection type ovens have an indicating or recording thermometer, therefore it is possible to ascertain the temperature within the oven at any time. With infra-red, the situation is different. Here the only way to ascertain the temperature is with a thermocouple with the proper indicating instrument. How many users of industrial finishes that bake by infra-red have any means of checking the temperature of work being baked? I feel sure there are surprisingly few. This alone accounts for many of the problems that confront the paint chemist when he is developing finishes to be dried by infra-red.

The time and temperature at which various enamels will cure under infra-red will vary considerably. It is customary for paint manufacturers and users to refer only to the time required to bake a given material by infra-red. No reference is made to the temperature. *All specifications referring to the baking of infra-red finishes should refer to the time and temperature at which such a coating should be baked, just as when reference is made to convection oven baking.*

Frankly it may be that my experience is a little unusual, but nevertheless it seems that I have had more dealings with plants that have inadequate infra-red facilities than vice versa. In a number of these plants, the infra-red

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Phosmul is a solvent emulsion containing Phosphoric Acid. It does not appreciably corrode washing machine pumps, walls or conveyor tracks. Accordingly, equipment already in use with alkali and non-acid solvent emulsions can be used to obtain the superior results which Phosmul gives.

Hot solutions of Phosmul are unaffected by hard water, and do not suds excessively; they are non-inflammable and do not evolve disagreeable odors or toxic fumes.

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equipment has been installed without the sound counsel of someone who knew what they were doing. My earnest plea to any industrial finishing material users who are contemplating the installation of infra-red equipment is to *deal with concerns that know their business.*

One important point that should be borne in mind before making a new installation is the type of baking enamel (oxidizing or polymerizing) that is to be used. This is important for two reasons: 1) It has something to do with how long the banks of infra-red lamps must be, and 2) the cost of the enamel. Baking enamels that dry only by oxidation cost less money than those that dry by polymerization. Likewise, enamels that dry by oxidation require a much longer drying time at a given temperature than those that polymerize.

Many users of industrial finishes are now using air-drying materials that are somewhat less expensive than even the oxidizing types of bake enamels. As previously mentioned, the oxidizing bake enamels are not just air-drying enamels under a different name; generally they require different types of vehicles than air-drying enamels. As such, there are many present-day users of industrial finishes who are using air-drying enamels that have a cost of say $1.75 per gallon. If they were to install a convection oven or infra-red lights, their cost might conceivably jump to $2.00 or $2.25 per gallon on an oxidizing baking enamel, or $2.50 to $3.00 per gallon on the polymerizing type. Now this doesn't always hold true, but it does so often that it would be wise to see your paint supplier before installing baking equipment.

Baughn Chemical Products Co. Moves to Larger Quarters

Baughn Chemical Products Co., (Exclusive processors of Crystal Tack Rags), Chicago, has moved to new and larger quarters at 7025 N. Ravenswood Ave., Chicago 26, Ill.

Optimus Detergents Co. Appoints Service Man

Clarence M. Smith, of Lancaster, Penna., has been appointed field service representative for Central Pennsylvania, by Optimus Detergents Co., 208 Church St., Matawan, N. J., manufacturers of industrial cleaning materials. Mr. Smith has had a wide experience in the industrial cleaning field. The appointment of Mr. Smith is part of an expanding sales and service program now being undertaken by Optimus.

Wyandotte Chemicals Adds Two Ohio Representatives

Charles N. Chalfont and John E. McCarthy are recent additions to the Industrial Department Service staff of Wyandotte Chemicals Corp. Both were given practical training courses in several Wyandotte territories before being given their Ohio assignments — Mr. Chalfont to Dayton and Mr. McCarthy to Columbus.

For 13 years Mr. Chalfont was a member of the laboratory staff of a steel company, and for the past four years was the Detroit representative for a manufacturer of cutting, drawing and grinding lubricants. His chemical and metallurgical studies at Carnegie Tech and University of Pittsburgh, and his memberships in the American Society of Metals and Society of Lubrication Engineers will be of practical value to Mr. Chalfont in his Wyandotte service work. He will assist Tom McHugh, veteran Wyandotte man who is well known in the Southern Ohio metal finishing industry.

Mr. McCarthy is a resident of Columbus and attended Ohio State University. For four years he was head of the Engineering Materials Laboratories of an aircraft firm and directed the activities of the chemical, metallurgical and physical sections. His previous experience plus his "refresher" training makes him well fitted for servicing Wyandotte products in the metal finishing industry. He will operate under the direction of the Cleveland office of Wyandotte Chemicals where Earle J. Esner is the Industrial Department representative.

Flock Finishing In a Custom Shop

By J. DONALD BOSTROM
President Screenprinting & Flocking Industries

What kinds of adhesives and flock are available; their respective characteristics and merits; and the technique of how to apply them effectively.

THE ART of applying flock to various surfaces may be divided into four parts, namely, adhesives, methods of applying adhesives, flock, and the application of flock. At least five different types of adhesives are available for commercial use. They are: 1) water-soluble glue, 2) enamel, natural or synthetic, 3) alkyd resin, 4) lacquer, and 5) special adhesives having a rubber base. Each type of adhesive has its peculiar characteristics and merits, and each one is used for a definite reason insofar as flocking is concerned.

Adhesives for Flock—Water-Soluble Glue

Water-soluble glue may be used on practically any surface—paper, wood or metal. In fact it can be used on any surface on which it will stay wet long enough to allow the flock fibers to be applied, without injury to the product. While it is seldom done, glue could be used on cloth or gypsum, provided the surfaces were properly prepared by filling or sizing to prevent instant absorption of the wet adhesive. Being water-soluble, glue can be used only where waterproof qualities are not essential.

Glue is economical and it is transparent. For the latter reason glue is frequently used on paper, especially where it is desired to have an outline drawing or picture show through the flock. Glue may be tinted with analine dyes, but this coloring has no effect on its transparency.

Other uses for glue as a flock adhesive include the spraying of Christmas trees to make them resistant to fire; and as a base for the application of tinsel, gold or silver. It is not advisable to add French talc or any other filler to

Sample cards, certain parts of which are skillfully and accurately coated with brightly colored flock to give rich realistic effects.

the glue to make it opaque, as any added material will reduce its adhesive qualities. Glue should not be used as an adhesive for flock in kitchen-cabinet silverware-drawers because it is not waterproof.

Natural and Synthetic Enamels; Alkyd-Resin Adhesives

Natural or synthetic enamel is easy to use and it is a popular adhesive for flock. It can be used on any surface, including most fabrics. It is opaque, water resistant and available in all colors. The solvents in enamel do not evaporate so rapidly, therefore if the flock is put on soon afterwards, the adhesive coated surface will still be wet—not just tacky—when the flock strikes it.

Alkyd resin adhesives are flexible, tough and waterproof. They are available as clear material where transparency is required

Flock coated grille for new radio. The wire mesh grille was first flock coated in a color to match the radio cabinet; then it was over printed with flock of a lighter but harmonizing color.

Flock-coated card portraying a scene at Christmas time.

for products that must be reasonably waterproof. In a previous article on silk screen process work, I described the use of alkyd resin adhesives for precoating the backing paper for frameless glass pictures, and for attaching the coated backing paper to the reverse side of the glass. In this work transparency is necessary. Alkyd resin adhesives can be tinted to any desired color easily and economically; adding colors makes them opaque. As with enamel adhesives, the solvents in alkyd resin adhesives evaporate slowly, therefore they are well adopted to production work.

Lacquer Adhesives Dry Quite Rapidly

Lacquers formulated to serve as flock adhesives are available in clears and all colors. They dry rapidly, therefore greater speed is necessary in applying the flock so that the flock fibers will contact the adhesive-coated surface while it is still wet. A lacquer adhesive film is not as tough as natural or synthetic enamel; however, it dries more quickly and it may be classed as water resistant.

Special adhesives that have a rubber base or specially formulated alkyd resins are often used on certain jobs where elasticity and extreme waterproofness are required. They may be used on fabrics made

CLAREMONT flocks

RAYON COTTON WOOL

- Available in various length fibres. ✓
- Particles finely cut, uniform — fluffy yet filling. ✓
- Brilliant colors pastel shades . . . also neutral tones. ✓
- Industrial uses include soundproofing insulation surface coatings protective finishes, etc. ✓
- Decorative Simulations: Suede, velvet embroideries leather and upholstery fabrics. Readily applicable to glass, wood, metal, paper cloth, etc. ✓
- Details, samples and prices upon inquiry ✓

ENHANCING • COLORFUL • DURABLE

Luxurious, Flocked Interiors Stimulate Luggage Sales!

Colorful, seamless luggage interiors with the rich appearance of expensive custom fabrics can be quickly and economically achieved through the application of Claremont flocks. Broad selections of brilliant colors, pastel shades and neutral tone are available.

Claremont flocks lend themselves to a variety of industrial uses. Glass, metal, wood, paper and laminates all respond perfectly to flock treatment. Flocked surfaces provide firm anchorage, permit top labeling and screening. Your inquiry will bring samples and prices.

CLAREMONT WASTE MANUFACTURING CO.
CLAREMONT NEW HAMPSHIRE
The Country's Largest Manufacturer of Flock

Not embroidery work, but skillful flock coating in colors on fabric. A liquid adhesive for the flock was "screen stenciled" onto the smooth flat fabric, after which the flock was applied.

of natural or synthetic fibers, or on any other material where stretch and wash-ability are prime requirements. If the surface is highly absorbent, the area to be coated will require sizing before these adhesives are put on.

Most types of adhesives can be applied to the surface by spraying, silk screen processing, roller coating, dipping or brushing. The choice of methods to use in spreading the adhesive will generally depend upon the volume of production, the contour of the surface, and certain other characteristics of the product to be coated. A simple rule to follow is: The higher the viscosity of the adhesive, keeping within the boundries of workability, the better the resulting flock job will be—all other factors being equal.

How to Apply Adhesives; Spray; Roller Coat; Dip; etc.

If flock adhesives are to be sprayed, it is advisable to use a pressure-feed tank so that the air pressure can be regulated to force the adhesive to the spray gun. A single or double wet coat may be sprayed on, depending upon the thickness of the adhesive film required. For special adhesives with a rubber base, extra equipment may be needed to keep the adhesive hot, and greater air pressure may be required to spray these hot materials.

Any of the adhesives mentioned in this article can be silk screened with the exception of rubber-base adhesives; these are too gummy to pass through the silk mesh. Rubber adhesives must be sprayed, roller coated or "knifed" on for best results. For silk screen application, the screen is prepared in the usual manner, but the stencil must be adhered with a material that is non-soluble in the adhesive.

Roller coating or knifing* is well suited to spreading a uniform coating of adhesive over fairly large flat areas, such as panels or sheet stock. The thickness of the adhesive film can be accurately controlled.

The parts or products to be coated may be dipped into a container of adhesive if their size and shape will permit dip-coating—and provided the entire surface must be coated. Care must be used to assure complete draining of the dip-coated adhesive and at the

* This refers to pulling sheet stock or flat panels across a perfectly flat surface over which is positioned a straight-edge steel scraper or "doctor blade" which is adjusted to scrape off the excess coating material that is flowed on or spread on just before the stock passes under it.

Improve Radios and Inter-Com Systems with

Cellusuede FLOCK

Add acoustical qualities to radios and inter-com systems by coating cabinet interiors with cotton or Rayon Cellusuede Flock.

This low-cost, easily applied material helps to eliminate hum and sound interference . . . acts as a squeak-proof gasket when applied to adjoining wood or metal surfaces . . . forms a non-sagging, attractive speaker panel when sprayed on common mesh screen.

You'll notice, too, that market value as well as operating efficiency increases once you use Cellusuede Flock on many component parts of your product. Send today for samples, booklet, and prices of this extraordinary coating material.

Cellusuede Products, Inc.

ROCKFORD, ILLINOIS

same time prevent the solvents from evaporating too rapidly during the draining period.

Spreading the adhesive by brushing is generally limited to small jobs. Sometimes it is used on products that are definitely not adapted to the silk screen process, or where the surface is to be only partially flocked, and brushing will save an expensive masking job.

Regardless of how adhesives for flock are put on, there are two important rules to observe: 1) As the length of the flock fiber to be applied is increased, so must the thickness of the adhesive film be increased; 2) in applying ordinary flock fibers ($\frac{1}{32}$ to $\frac{1}{16}$-in.), as the thickness of the adhesive film is increased, so will the thickness of the resulting flock coat be increased.

Characteristics and Merits of Different Kinds of Flock

Flock is available in cotton, wool and rayon—in various lengths and in practically all colors. We use three standard length fibers, $\frac{1}{32}$-in., $\frac{1}{16}$-in., and $\frac{1}{10}$-in., but for some special jobs we occasionally use flock fibers as long as $\frac{1}{4}$-in. The longer length fibers produce a softer textured finish but they are much more difficult to adhere to the surface.

Cotton flock may be described as having practically no nap. It is not fibrous and it produces a dull smooth finish similar to suede. Wool flock is somewhat rough and fibrous, and is never used where a soft finish is required. Rayon flock is probably more widely used than any other type because the length of the

At right a workman is spraying adhesive on metal turntables for record players. In booth at left, flock is being applied to wet adhesive-coated turntables. Notice the portable metal tank below flock booth. Oversprayed flock is collected in this tank and used again.
At extreme left, flock-coated turntables are being placed on conveyor belt which carries them through an infra-red drying tunnel.

RESEARCH-FITTED TO SUIT YOUR NEEDS EXACTLY

CARPET

FELT

MOHAIR

SUEDE

VELOUR

"SPANGLES"

Rayco Flock Synthetic Finishes

IN ANY COLOR—ON ANY MATERIAL

FUNCTIONAL USES

Used in the auto, airplane, radio, electrical, phonograph, ceramics, furniture and many other industries for surfacing all sorts of materials to provide TEMPERATURE INSULATION • SOUND DEADENING • INTEGRAL GASKETS • SHOCK ABSORBING SURFACE • NON-MAR SURFACE • NON-GLARE SURFACE.

DECORATIVE USES

Applied in various lengths and colors to wood, paper, cloth, metal, etc., the following effects are produced—

FURNITURE UPHOLSTERY • SUEDE LEATHER • INTERIOR AND DRAPERY FABRICS • VELVET • VELOUR • MOHAIR • CARPET.

REQUEST: "SURFACE COATING WITH FLOCK"

Rayon Processing Co. of R. I., Inc.

PIONEER PRODUCERS OF SURFACE COATING FLOCKS

55 Tremont St. • Central Falls • Rhode Island

fibers can be closely controlled. These fibers are cut to predetermined lengths, making it possible to simulate plush, velvet or velour. Using the same film thickness of adhesive and identical methods of flock application, rayon fibers will average 90-sq. ft. per pound, while cotton fibers will cover at the rate of 100-sq. ft. per pound.

Flock should always be stored in a warm dry place. Moisture causes flock fibers to cling together and they become matted or pressed into various size lumps. To promote dry warmth during the application of flock, we have installed an infra-red lamp which is directed against the metal tank in which flock is collected and distributed to the flocking machine. Also there is an infra-red lamp in the flock booth. Our storage room is kept at a dry heat of 80° F.

Flock Can Be Applied by Spraying or Vibrating

Flock fibers may be applied to a prepared surface by spraying through a special nozzle, or by means of a vibrating screen, or by hand. The main purpose is to distribute the flock fibers uniformly over the surface area to which adhesive has been applied, and do this while the adhesive is still wet.

In one of the illustrations in this article, a workman at the right is spraying adhesive on record player turntables as they revolve on a motor driven table. The wet turntables are immediately transferred to an air-driven rotating table in the flock booth where flock is blown over the wet adhesive.

Upon removal from the flock booth the flock coated turntables are placed on a conveyor belt which carries them through on infra-red oven where they are dried for six

Close-up of infra-red drying tunnel in which flock coated turntables are quickly dried. At exit end (left) a workman places the completed turntables in a portable rack.
In background you see part of portable tank containing flock; also, motor and pneumatic apparatus for pulling flock from tank and blowing it into spray booth.

MYLAN FLOCK
FOR A RICH, COLORFUL FINISH

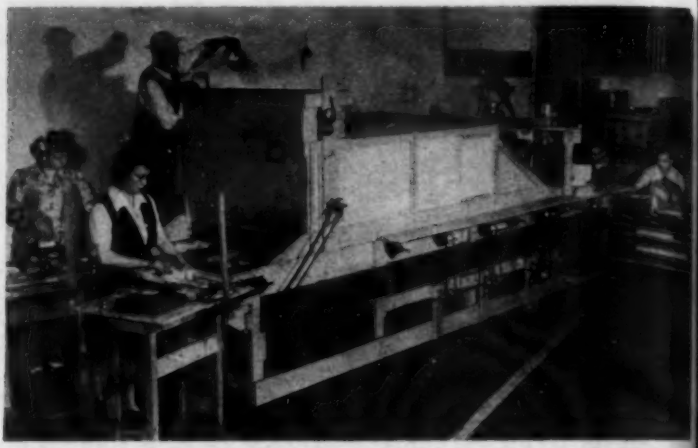
The variety of handsome surface effects that can be achieved by the use of MYLAN Flock is virtually unlimited.

MYLAN Flock, in rayon, wool or cotton, gives handsome, rich tones and textures to all types of decorative papers, displays and backgrounds. It gives a modern and more attractive finish to toys, radios, automobile and airplane interiors, jewelry boxes, packages. It adds new appeal to flags and banners, permits new concepts of design in fabrics, curtains, furniture covers.

MYLAN Flock makes ideal sound-proof and scratch-proof bases for desk objects, file cabinets, etc. It can be screened or sprayed on. Any color of the rainbow can be matched.

"A Little Covers A Lot Of Surface"

MYLAN
MYERS-LIPMAN WOOL STOCK CO., Inc.
22 NORTH MOORE ST., NEW YORK, N.Y.
Pioneer Manufacturer Since 1875



View of power operated flocking machine. Girls at left are screen processing adhesive on greeting cards. Cards are placed on moving belt which travels over vibrator bars. Flock is fed in from hopper. At exit end (right) suction hoses pick up excess flock and deliver it to tank for use again.

minutes at 350° F. Cooling takes place in portable racks, after which the finished turntables are packed for shipment. The floor of the flock spray booth extends only half way between front and back of the booth. Excess flock fibers are blown into a portable metal tank from which they are picked up by suction and again sprayed through the nozzle of the gun.

Features of Vibrating Machine for Spreading Flock

Several different types of vibrators or beaters are used for spreading flock fibers. We prefer the type in which the vibrator bars rotate under a taunt cloth screen. As the bars rotate at high speed, the screen is set in motion, creating static and causing the flock fibers to bounce from 1-in. to 2-in. above the screen. Referring to the photograph of the flocking machine illustrated in this article, the principle employed is exactly the same except that there are six vibrator bars, and the moving belt which carries the work through the machine forms the taunt screen on which flock fibers are vibrated over the work.

Flock is fed into the machine from an overhead tank at the front. Excess flock fibers are drawn through six suction hose at the rear of the machine and blown back into the storage tank. The vibration method of spreading flock gives an excellent flocking job, as it packs the fibers into the adhesive very tightly (as many as 200,000 per sq. in.).

Spread Flock on Wet Adhesive

Hand spreading of flock is only used where production is extremely limited, and over comparatively small areas to be flocked.

As a general rule it is customary for the adhesive to match the

ANNOUNCING

FLOCK

BY BEHR-MANNING

For Color • Beauty • Utility • Sales

To flock finishers throughout industry, and to industrial finishers who may be contemplating flock finishing for their products, we are pleased to announce the availability of FLOCK—by BEHR-MANNING. ¶ Behr-Manning Flock is cut to precision length from selected, new rayon, scientifically dyed in a complete range of colors. Free-flowing, it feeds easily in all types of flock coating equipment. It covers readily to yield a dense, uniform velvet-like finish of unusually fine decorative and functional properties. Behr-Manning Flock is manufactured, processed and tested under the same laboratory controls and to the same quality standards which have characterized our 75 year tradition for quality and service in the manufacture of Coated Abrasives. ¶ Write for prices or let us send you our new color guide and information booklet "Flock Finishing".

BEHR-MANNING (Division of Norton Company) TROY, N. Y.

75 YEARS OF QUALITY AND SERVICE

flock in color. However, various color combinations are possible through the use of different colored adhesives.

We have found that a better flocking job is produced by applying flock fibers immediately after the adhesive is spread; in other words, before the surface becomes tacky. When the adhesive film is wet, the ends of the fibers sink deeply into the film and become permanently anchored when the adhesive dries. If the adhesive is allowed to become tacky, the fibers get only a surface hold.

Extreme care must be used to prevent anything from touching a freshly flocked surface. Otherwise, being wet, the flock could be rubbed off. A drying period of 8 to 12 hours is generally required for air drying a flock coated surface. However, the surfaces can be force dried in six to 15 minutes if an enamel or alkyd resin adhesive has been used. For lacquer adhesives about four hours of air drying are generally sufficient.

Racks and other factory equipment which become coated with flock during operations can be cleaned off with a stiff wire brush, followed by vacuum cleaning.

To Make "Monastral" Pigments

The Du Pont Co. will build a new unit in Deepwater, N. J., to manufacture organic "Monastral" pigments. The "Monastral" pigments include two brilliant blues and a brilliant green, sold in many physical forms to meet specific application conditions of the user. Due to their high resistance to fading by sunlight, acids, alkalis, and other conditions destructive to colors, the organic "Monastral" pigments are in great demand.

Critical materials, such as chromium and lead, widely used in manufacturing green pigments of lower durability, will be released for other purposes through the increased production of "Monastral" green which does not require these materials.

Problems We Solved On a Custom Job

Herewith is a little story about "Spraying Safe-Deposit Boxes," which goes to show that in a finishing plant it's the little unconsidered things that can cause the most trouble. But after we hit on the idea of warming our jet air to render it innocuous, we went through the remainder of the job without even looking back—and we might even be induced (!) to take on another batch from the outside, if properly approached.—THE AUTHOR.

A JOB FINISHING shop, even more than the finishing department of a large factory, can stumble into difficulties on what seem, at the contracting stage, to be simple run-of-the-mill operations. Primarily to help out a neighbor when plant difficulties shut down the finishing department of a manufacturer of safe-deposit boxes, we took over the task of finishing a large order of the units, although at a price which promised to show a nice profit.

The boxes, some 26x4x2-in. over-all, were of pressed aluminum, with lock-corner seams and a narrow bridge midway across the top which held the two hinged lids when the unit was assembled. It was to be a one-coat spray job with infra-red baking of the enamel. Finish inspection requirements were high.

The units, formed but without lids, were delivered to our receiving platform by the manufacturer. They were supposed to be clean, but they were not. Nearly every box bore finger prints or glove smears, over which

(Continued on page 56)

ENGINEERING ABILITY BACKED BY 30 YEARS OF EXPERIENCE

DSM

DETROIT SHEET METAL WORKS
DETROIT, MICH. U.S.A.

EXPERIENCE and ability acquired in thousands of installations are at your service when selecting D. S. M. equipment.

D. S. M. case histories have been derived from equipment furnished to plants throughout U.S.A. and to Dagenham, England; Clichy, France; Bombay, India; Batavia, D. E. I.; Sao Paula, S. A.; Turin, Italy; etc. D. S. M. equipment means rapid cross flow circulation for speedy and uniform drying or baking. This avoids case hardened products.

It will be to your advantage to have our highly experienced engineers, personally inspect your system and work together with the various departments in your plant in need of special help.

PLANT ENGINEERING: *Consulting assistance in plant layout to coordinate departmental operations, our experience dated from 1917 in this field.*

Such plant layout may be based on increasing production beyond present capacity, or it may be a rearrangement in this post war period when operations are conducted under a new set of conditions.

MOTOR CLEANING EQUIPMENT: *Washing machines for cleaning tear-downs. Kerosene spray or similar solvent usually used as the cleaning medium.*

FORMED COWLINGS, PANELS, ETC.: *To your specifications, and of light metal alloys as required. Weldments and brazed assemblies may be under controlled atmosphere.*

PILOT EQUIPMENT: *Sample size equipment for development of heavy equipment.*

VERTICAL CORE BAKING OVENS • CONTINUOUS HORIZONTAL BAKING OVENS • BATCH TYPE CABINET OVENS • DRAWER OVENS

DETROIT SHEET METAL WORKS, 1301 OAKMAN BLVD., DETROIT 6, MICHIGAN

DETROIT SHEET METAL WORKS
DETROIT 6 MICHIGAN

the spray would neither lie evenly nor dry uniformly.

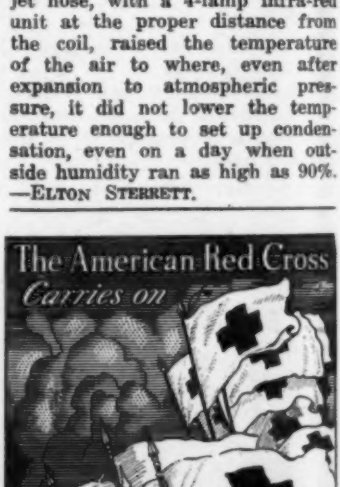
We called in a cleaner friend who suggested a spray and rinse. This took off the blemishes but left moisture in the lock-joint seams. The entrapped moisture would lie dormant until the units reached the infra-red bank. Then it turned to steam and tried to crawl out from under the finish —and it usually escaped, leaving a trail of blisters and bare spots behind. This problem had turned up in previous work, and we knew the answer. A short pass through an auxiliary light bank warmed the boxes to above 212° F. and drove off the troublesome moisture.

So long as they could go directly from drier to spray booth the aluminum boxes emerged with a fine smooth red coat that would make any fire chief happy. But when the cleaning department (two girls) got ahead of the spray booth, whatever dust happened to be in the air would inevitably settle out on the septically clean boxes, and again results would fall below the desired mirror-like smoothness.

We tried wiping the boxes with soft rags, but found that the aluminum surface, though apparently smooth to the touch, was formed of myriads of small hooks which snagged the cloth and retained tiny wisps of its fiber. (If we had seen page 50 of I. F. for December 1946, we would have known better than to try wiping rags!) Blowing off the dust with compressed air was not always satisfactory.

The air jet, as nearly moisture-free as we could get it for spray-gun use, sometimes left microscopic droplets of moisture on the aluminum. These would cause blisters and tiny "fly-specks" when spray-coated and heated. The moisture was finally traced to the air in the room. Well above dew-point at room temperature, the cone of air within the jet was chilled by its expansion as it left the nozzle and spread over the work. In its passage it also cooled the adjacent air, reducing its temperature to the point where a portion of its entrained vapor would be condensed, forming the tiny droplets visible on the metal surface.

Of the two remedies for this condition—heating the work or warming the air—we chose the latter as being more easily controlled. A coil of copper pipe, set in between the air main pipe and jet hose, with a 4-lamp infra-red unit at the proper distance from the coil, raised the temperature of the air to where, even after expansion to atmospheric pressure, it did not lower the temperature enough to set up condensation, even on a day when outside humidity ran as high as 90%. —ELTON STERRETT.



Here are your
CHADELOID-AUTHORIZED suppliers:

Your favorite supplier is probably included in this list. Ask him for stains sold under his trade name which are manufactured under the *Chadeloid* non-grain-raising patents. If your supplier is not listed here, ask him to get in touch with us.

Adams & Elting Co.
Advance Paint Co.
American Paint Works
Atlantic Lacquer Mfg. Co.
Atlas Powder Co. (Zapon Div.)
Atlas Powder Co.
Aull & Wilborg
Burrett Varnish Company
Bigelow Varnish Co.
Billings-Chapin Co.
T. L. Blood Co.
Boston Varnish Co.
Andrew Brown Co., Inc.
A. C. Buschman & Co.
Campbell Paint & Varnish Co.
Carsol Chemical Co.
Carpenter-Morton Co.
Chicago Bronze & Color Works
Cincinnati Varnish Co.
Clover Leaf Paint & Varnish Corp.
Cudner & O'Connor Co.
H. B. Davis Co.
V. J. Dolan Co.
Farrell Paint Co.
Flood & Conklin Co.
Forest City Paint & Varnish Co.
Foy Paint Co., Inc.
W. P. Fuller & Co.
Glidden Co.
Grand Rapids Varnish Corp.
Grand Rapids Wood Finishing Co.
C. W. Haynes Laboratories, Inc.
Heath & Milligan Mfg. Co.
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Lenoir Wood Finishing Co.
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Lilly Varnish Co.
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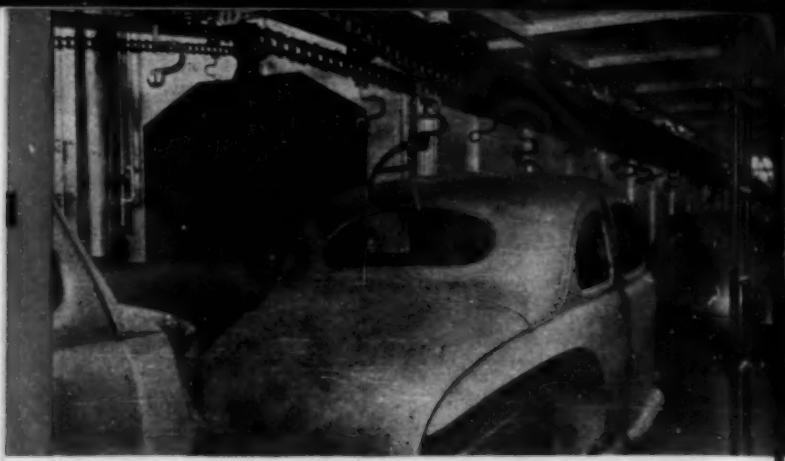
CANADA

Murphy Paint Co., Ltd.
Penfound Varnish Co., Ltd.

U. S. PATENTS—1,877,748—1,898,247—1,930,768—1,977,345—2,000,120—2,000,121—2,044,770 2,093,424—2,105,984—2,161,203. CANADIAN PATENTS—330,344—343,162—343,163. Applications pend.

NON-GRAIN-RAISING STAINS ARE AVAILABLE THROUGH ABOVE MANUFACTURERS OF WOODFINISHING PRODUCTS



The

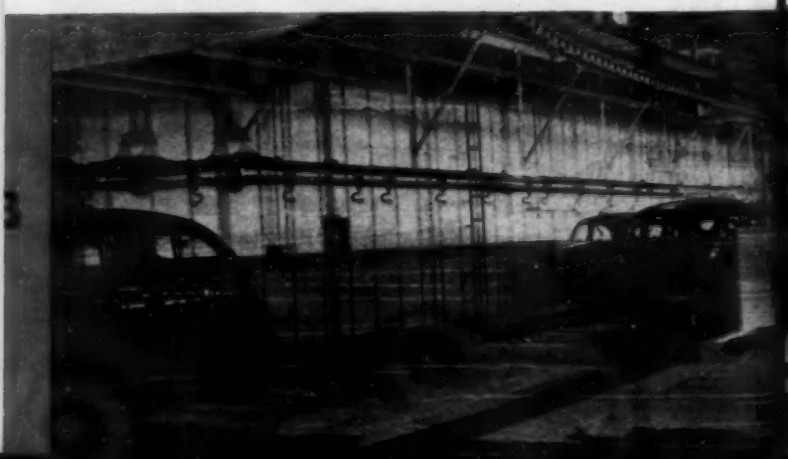
By E. M. BUELL
Plant Manager for
Ford Motor Co., Chicago

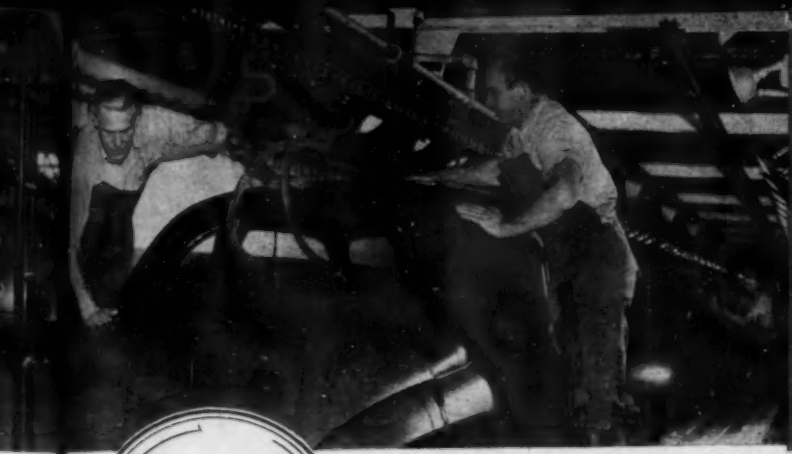
1—Auto bodies are carried along by overhead conveyor through all of the operations from metal cleaning to and through baking the enamel.

2—Wet-sanding deck. Notice jets of water from overhead pipes. On all flat and gently curved surfaces, portable, air-operated, reciprocating, two-pad sanding machines are used.

3—Foreground shows gravity rollers and transfer cars for quickly and easily transferring auto bodies from one overhead conveyor line to another.

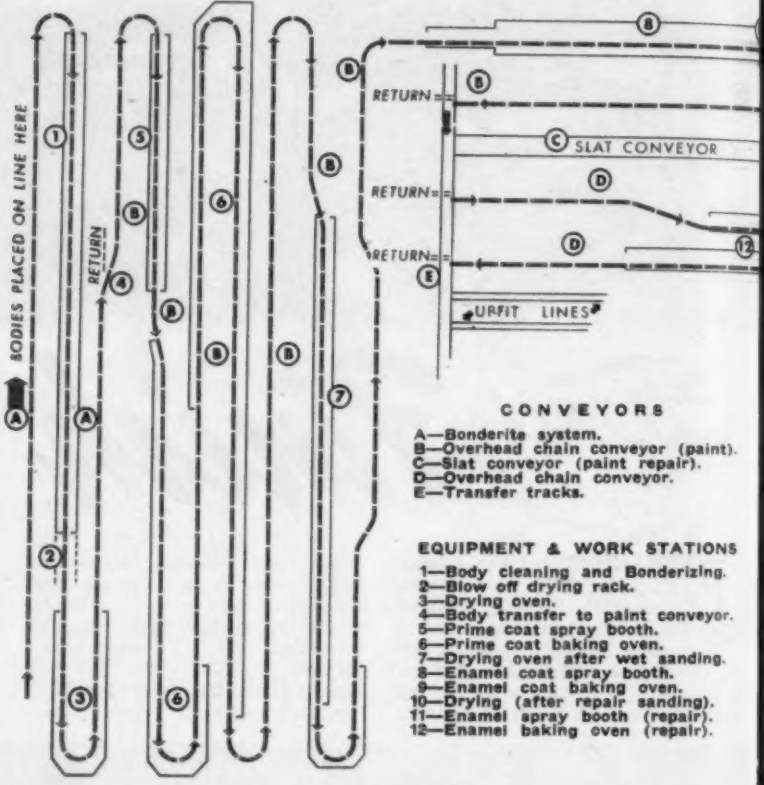
4—Mercury and Ford automobiles completely cleaned up and coming off the line ready to leave the factory.





Ford Finish

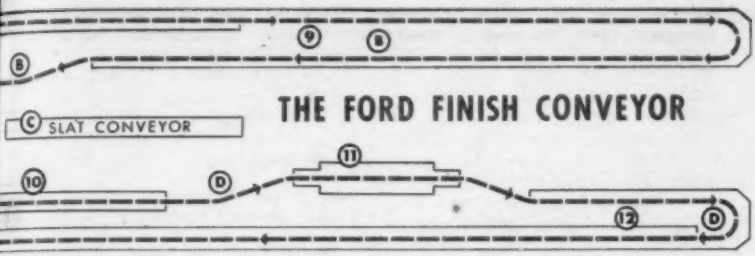
PERMANENCE of the original attractive finish on your new automobile is really planned by the motor car manufacturer. Few other finished products are subjected so consistently and so continuously to outside exposure, yet the fine smooth finish on an automobile is expected to remain bright and durable for a long time. The quality and durability of an automobile finish can be attributed to: 1) scientifically planned specifications, and 2) strictly following these specifications in production. *(Next page)*



The foundation of the finish is the surface to which it is applied. Careful preparation of the metal to receive priming and finishing coats is a matter of first consideration in production. In this article I will endeavor to explain and illustrate the chief features of our system and setup for preparing surfaces, applying the finish, and baking the finish on Ford and Mercury automobiles, as performed in our Chicago plant.

Cleaning and Bonderizing in Preparation for Painting

After fabrication of bodies, all excess grease is removed from the surfaces by washing with mineral spirits. This preliminary washing is done just before the bodies are suspended from an overhead chain conveyor which moves them through metal cleaning and Bonderizing operations. Hangars on the conveyor chain are spaced on 14-ft. 4-in. centers and the



THE FORD FINISH CONVEYOR

chain moves at a speed of 9-ft. a minute. The sequence of operations in the power washer (Station No. 1 in the floor plan layout) includes spraying alkali cleaner at 150° to 160° F., and a hot water rinse at 150° F.

Next the Bonderizing solution, maintained at a temperature of 140° F., is sprayed over the body.

For smoothing the prime coat, portable, air-operated reciprocating sanders are used on all gently curved surfaces. The sanding is done with water. Water is supplied directly to surface below the moving sander.

Then follows space for draining; a hot water rinse at 150° F.; draining space again; and a spraying of chromic acid solution (4-oz. of chromic acid to 100 gallons of water) at a temperature of 150° to 160° F.

All solutions are titrated (checked for strength) every hour and necessary additions are made to maintain their required strength. From this point on, workmen wear clean cotton gloves in handling automobile bodies in order to avoid making finger prints on the metal—which would prove seriously detrimental to the final finish.

At station No. 2, filtered compressed air is used to blow all remaining liquid from seams, channels and screw holes. Bodies enter the oven (No. 3 in layout) and are subjected to a temperature of 250° F. for 8 minutes. They are transferred to an overhead conveyor B (at station No. 4) which takes them through the painting and paint drying operations. The spacing of hangers on conveyor B and the chain speed are the same as on the cleaning and Bonderizing conveyor.

First operation on the paint line is a special pre-priming of certain hard-to-reach places such as for example, the real narrow channel

where the top and sides are welded together. A spray gun equipped with a special nozzle is used to force primer into these and other hard-to-reach places. This precaution provides insurance against rust starting in these places.

Bodies are given a final blow-off before they enter the spray booth (No. 5) for an over-all prime coat. This booth is equipped with reciprocating spray guns, and an automatic release which operates in a pit in the floor. The guns automatically spray a coat of alkyd primer over all underbody surfaces.

An alkyd primer is hand sprayed over the bodies. This is followed, in 1½ minutes, with a second coat of the same material. Almost immediately thereafter the bodies enter the baking oven (No. 6) where the primer is baked for one hour at 250° to 275° F.

Cold Water Spray Over Baked Prime Coat; Wet Sanding

At the exit end of oven No. 6, fixed nozzles spray cold water over the entire body to cool the metal and prepare the surface for wet sanding. Flat and nearly flat surfaces are machine sanded with portable machines fitted with No. 280-A waterproof abrasive paper. Surfaces that have too much curve or bend to be machine sanded are hand sanded with No. 360-A waterproof paper. The conveyor line is elevated along one section of the wet sanding deck to permit the easy sanding of door panels and the lower body panels.

With wet sanding completed, the entire body surface is washed with cold water. All seams and joints in the interior of the body are given a heavy coat of asphalt-base rubberized material which is applied with a flow gun. This material is applied hot and under pressure. Bodies are then dried in oven No. 7 for 30 minutes at 250° F. Upon leaving this drying oven a thorough inspection is made. Then follows knife glazing, light hand sanding of glazed areas, and a complete blowing-off with compressed air.

Tack Rag Wiping Before Final Enamel Spraying

In booth No. 8 where enamel is sprayed on the bodies the first operation is a tack-rag wiping of the outside of the body. This is followed by a spray coat of synthetic enamel over the entire interior surface. Then the first top coat of synthetic enamel is sprayed over the outside. After a "flash" drying of 1½ minutes a second top coat of the same material is applied, and the bodies immediately enter oven No. 9 which is connected to the spray booth. The entrance to this oven serves as a preheater. Bodies travel for 10-minutes at 220° F. before they reach the zone where they are baked for one hour at a temperature of 250° to 275° F.

Booth No. 8, in which enamel is sprayed, is maintained under pressure. Filtered air is forced into the booth at the rate of 107,840-cu. ft. per minute, while exhaust fans expel air at the rate of 98,840-cu. ft. per minute. Spray laden air is filtered through a water spray, the water being pumped outside the booth into tanks where sludge settles and is removed. In this pressurized spray booth, automatic regulators hold the temperature at 80° F. while the relative humidity is 75%.

In addition to the use of controlled temperature and relative humidity, viscosity tests are made on all finishing materials in the

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Baked-in beauty that assures your product not only winning eye-appeal but continuing customer satisfaction because of its durability, can now be obtained in a matter of seconds with M&W's newest development — Flashdur.

This new high heat, flash baking finish may be applied by either the spray or dip method . . . baked in Convection or Infra Red Ovens, Strip or Induction Heaters. It is also suited for conveyorized automatic application. Available as a clear finish and in most colors, Flashdur is the ideal finish for compacts, lipstick cases, lighters, instruments and numerous other metal products.

For complete information on Flashdur, write for Technical Data Bulletin 116 and the Standard color card. And don't forget, an M&W technical consultant is always available to discuss your requirements with you privately on any finishing question you may have.

PIONEERS IN PROTECTION M&WCO 1876

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central paint circulating storage room, which is also kept at a temperature of 80° F. These tests are made with a Ford No. 4 cup. The spray booth is maintained at this temperature so that both the material and the metal surfaces will be warm enough to assure an easy smooth flow of the enamel. The purpose of the high relative humidity is to retard evaporation of solvents while the enamel is being sprayed—this to assure a smooth leveling out of the material.

As bodies leave oven No. 9 they pass under fluorescent lamps where a thorough and careful inspection is made. Minor repairs are made on flat-bed conveyor C, the second section of which is also used as a gap storage area. Finished bodies move forward to transfer tracks E, where they are loaded on transfer tables which deliver them to the trim lines.

Setup That Takes Care of Repair-Finishing Rejects

Reject bodies are transferred to overhead conveyor D which operates at a speed of 6-ft. 9-in. per minute with hangers spaced on 14-ft. 4-in. centers. Defective areas in the finish are wet sanded down to the prime coat, after which the bodies pass through oven 10, repair enamel booth 11, and bake oven 12 for the same operations as were performed along the paint production line on overhead conveyor B—except that here the work is on a smaller scale.

All equipment in this plant is especially suited for automotive cleaning and finishing, and every safety feature is provided. The washer No. 1 is equipped with two sets of pumps and controls to insure continuous operation. All conveyor lines, washer, ovens and booths have safety cables or a limit switch which immediately stops the line in case a body falls off a hanger.

Finishing Materials are Piped From Central Storage Room

Finishing material of correct viscosity is piped to the spray guns from a central paint circulating storage room. This material storage room is outside the main building and contains storage racks for drums of material. Within the storage room are drum rockers or agitators, and eleven 60-gallon pressure tanks. Finishing material is filtered into the pressure tanks and is circulated through supply lines to the spray booths. At each spray booth the material passes through a filter before it reaches a spray gun.

The film thickness of the prime coat will average .00075-in.; after sanding it must be less than .0005-in. After application of two top coats the average film thickness must be not less than .0015-in. We consider this of sufficient importance to warrant running test panels through the lines at irregular intervals to permit complete tests to be run in the quality control laboratory.

Automobile hoods are washed, first with mineral spirits and then in alkali cleaner. To neutralize the alkali washing, an alcohol-ammonia solution is used as a quick rinse, after which the hoods pass through an oven for an 8-minute period of drying at 220° F. Upon leaving this oven, the hoods are removed from the line to receive their hinges. Next follows wiping with a tack rag.

Back on the line the hoods are conveyed through a water wash spray booth where an alkyd-base

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The results are the same on all—a fine, uniform crystalline coating, that takes and holds the final finish, greatly retards flaking and peeling. On steel, Bonderizing guards against rust, on zinc and aluminum, against the corrosion typical of these metals when untreated.

Now manufacturers whose production metals are mixed can have the advantages of Bonderizing with the greater economy of a single finishing line. Write for FREE booklet on Bonderite No. 170.

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Chassis spray booth. Straight ahead (center) is hydro-whirl unit; here the left side of chassis is sprayed. At extreme left is another unit where the right side of chassis is sprayed.

primer is applied. The primer is baked for one hour at 250° to 275° F. Due to the curved contour of hoods, the wet sanding is done by hand, using No. 360-A waterproof paper. A thorough washing and blow-off with compressed air follows; then the hoods are dried for 38 minutes at 250° F.

After inspection the hoods are given their finishing coats—two coats of enamel on top, and one coat on the under side. This finish is baked for one hour at 250° to 275° F. Then comes another inspection, after which hoods are placed on the hood delivery line.

Black Fenders are Completely Dip-Coated and Baked

Fenders are received with their surfaces Bonderized, therefore our first operation is light sanding with No. 100 emery cloth. Next comes inspection for dings. Any repairs that may be needed are made and followed by grinding and buffing. Back on the production line the fenders pass through a trichlorethylene vapor degreaser. After a tack rag wiping they are dip-coated with a black oil-base primer. Upon emerging from the 3300-gallon dipping tank the fenders drain and enter an oven where the prime coat is baked for one hour at 350° F. Inspection follows and then they are given a light sanding with No. 360-A waterproof paper.

Fenders that are to be painted in some color other than black are transferred to another conveyor where they are washed with naphtha, wiped, blown off and tack ragged. The undersides of all

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MEN WHO insist upon Rinshed-Mason lacquers and enamels are men of perception. Industrial finishing experience has taught them to appreciate the sound value of the R-M name . . . a name representing over twenty-five years of intensive laboratory work . . . unceasing quality control . . in the manufacturing of the *finest* industrial and automotive finishes.

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ENAMELS, LACQUERS AND UNDERCOATS SPECIFICALLY CREATED FOR INDIVIDUAL REQUIREMENTS

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fenders are given a spray coat of synthetic enamel. The top sides are given two coats of enamel and baked the same as hoods and bodies.

Those fenders that are to be finished in black are placed back on the tank line after a naphtha washing, wiping, blowing-off and tack ragging, and are given a dip coat of black synthetic enamel; then they are preheated and oven baked.

A feature of the dip tanks is a "bubble-burster." It consists of a small diameter paddle wheel, as wide as the tank. This wheel is located at the exit end of the tank and it revolves slowly. The action of the revolving wheel either bursts the bubbles which form on the surface of the material, or it floats them to the entering end of the tank where they will not cling to the coating being applied to fenders. If the air bubbles were allowed to remain on the surface of the material where fenders emerge from the tank, some of the bubbles would adhere to the metal surfaces and, upon bursting, a ring or spot would result.

Prime-Coated Wheels are Enameled and Striped

Automobile wheels have been prime coated when we receive them. After being wiped with a tack rag the wheels are placed on an overhead conveyor which passes through a water curtain spray booth where two top coats of synthetic enamel are applied. This double-coating is baked in an infrared tunnel for 15-minutes at 350° F. After the wheels become cool, they are removed from the conveyor and placed on a power-driven rotator where an operator applies three perfect stripes with a machine striper. This is done in one operation. Inspection follows and wheels go to the tire mounting department.

Storing and Handling Solvents Safely

TO PREVENT accidents, many plants find it helpful to store organic solvents in a centrally located store room, with a responsible person in charge of issuing the liquids. Supervised distribution of solvents assists in avoiding fires, dermatitis or vapor poisoning which may be associated with the careless or improper handling of these chemicals.

One source of accidents which can be eliminated through such a method of solvent distribution is the use of unlabeled or incorrectly labeled solvent containers. Usually, drums of solvents are carefully labeled by the shipper, with information as to the nature of the contents and proper handling methods. With a supervisor in charge, it is possible to make certain that the label on every solvent container corresponds to the label on the drum from which the solvent is obtained.

The use of a requisitioning procedure has been found useful in a number of respects. The requisition form contains a statement of the purpose for which the solvent is needed. In this way, misuse and unauthorized use of solvents are avoided. A regular tally of requisitions indicates those departments which employ relatively large quantities of solvents and which therefore require careful checking from the safety viewpoint. Requisitioning also prevents waste, and provides a check on solvent consumption.

P. P. G. Co's Texas Paint Plant Doubled in Size

A $500,000 expansion program at the Pittsburgh Plate Glass Co's Houston, Texas, paint and varnish plant is announced.

Total floor space of the present plant, located on Liberty Road, Houston, will be doubled to 120,000-sq. ft. Production capacity for the manufacture of paints and varnish will be double the capacity of the original plant, construction of which was begun in the summer of 1940.

In conjunction with the plant expansion, a new control and development laboratory designed to serve the southwestern territory will be constructed. Manager of the Houston plant is James F. Crouch.

The Houston plant is the eighth paint and varnish plant operated by Pittsburgh Plate Glass Co. Others are located at Newark, N. J.; Detroit, Mich.; Dayton, Ohio; Milwaukee, Wis.; Pittsburgh, Pa.; Los Angeles, Cal.; and Portland, Ore. Another paint and varnish plant under construction at Springdale, Pa., will soon be in partial production.

O'Brien Varnish Co. Becomes "The O'Brien Corporation"

The Directors of the O'Brien Varnish Co., at their annual meeting, decided to change the name of the organization to The O'Brien Corporation. This change, under consideration for several years, was made solely to avoid confusion. It had been found, for instance, that many people were under the impression that O'Brien manufactured only varnishes. The new name more properly embraces O'Brien's complete line of paints, varnishes, enamels, lacquers, stains and other protective coatings.

The new name is effective now, although officials have stated that paper shortages and the difficulty of getting printing produced will delay considerably a complete switchover of its literature, labels and forms. No changes in the ownership, executive personnel or policy of the corporation have been made.

The O'Brien Corporation is one of the oldest and largest independents in the industry. It was founded, in 1875, by a practical paint and varnish man, on a practical idea. Patrick O'Brien, the founder, had been Superintendent of Finishing at the Studebaker Carriage Factory, then the largest in the world. In 1875 he invented a priming varnish which, when applied hot, took several days off the long and tedious process of carriage finishing. To manufacture this new material he founded the O'Brien Electric Priming Co. (In those days the word "electric" was a popular byword for lightning speed.) In 1894 he changed the name to O'Brien Varnish Co.

The O'Brien Corporation, still family owned, has kept its place among the leaders in this industry and has contributed substantially to the industry's technical achievements. O'Brien produces a large line of finishes for production use on furniture, automobiles, etc. and a full line of decorative paint products which are distributed by dealers in all states east of the Rocky Mountains.

O'Brien Corporation's paint, varnish and lacquer plant at South Bend, Ind.

Paint manufacturers use Eclipse Equipment in their own high solids formula testing.

No matter what the material being applied, you get certain advantages with Eclipse Low Pressure Spray Equipment. Savings in time, power and material are especially noticeable in high solids application.

With Eclipse you get complete coverage and faster application, less offspray and fumes. When you use high solids materials for your finishing, take advantage of the extra Eclipse benefits to get the best possible finish most economically.

There's a new, informative Eclipse Catalog 86, complete information on standard Eclipse Low Pressure Spray Equipment now available. And an Eclipse Engineer will be glad to show you how Eclipse Low Pressure can improve and speed up your products finishing operations.

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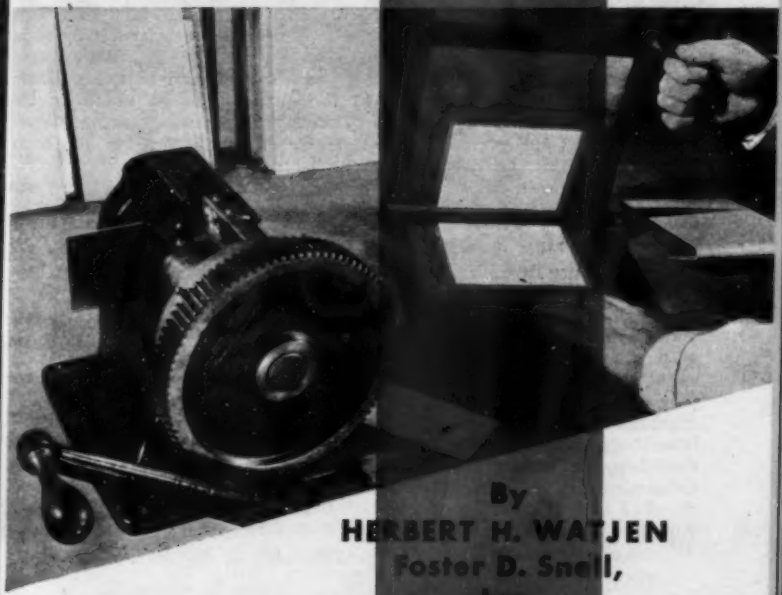
ECLIPSE

TESTS TO PREDETERMINE THE PERFORMANCE OF Furniture Finishes

THE VARIOUS materials used in finishing furniture are often formulated to comply with plant conditions of the manufacturer. Many finishes are not only tailor-made for a certain manufacturer, but sometimes they are even formulated for a particular suite of furniture in order to give the desired final appearance to that suite. Obviously it is necessary that there be close cooperation between the furniture firm and the supplier of finishing materials.

Many of the characteristics of a furniture finish do not show up immediately. A furniture concern



By
HERBERT H. WATJEN
Foster D. Snell, Inc.

may have a cooperative supplier and get finishes that yield the desired appearance, only to have that appearance change when the furniture is used over a period of time. Some furniture concerns like to have some sort of testing department which can work with their finishing department in the selection of the best finish, within a price range, for the various suites.

The finish manufacturer must have a laboratory in order to control production and develop new finishes according to customers' specifications. The finishing room can select the finish that is best for production, but only the laboratory can determine how it can be expected to perform over a period of time.

It is the purpose of this article to mention certain finishes used in the manufacture of furniture, to describe the desired characteristics, and to explain the methods of evaluation and testing used in our laboratory. The formulation of particular types of finishes is beyond the scope of this article but the testing and evaluation that is necessary for the development of the particular finish is covered.

Practical Considerations in Regard to Testing Finishes

From a furniture firm's standpoint, it is best to limit the number of suppliers and the number of samples submitted for a particular finish in order to avoid becoming a testing laboratory for several suppliers of finishes. If the company has no laboratory the testing can be done elsewhere in another laboratory. Otherwise the attention and time required to perform all of the tests will be too great. The various desirable characteristics of different types of finishes should be isolated, and test methods should be devised to measure these characteristics.

As much as possible, objective tests—those which require no personal opinion or judgment—should be used. Where personal judgment is necessary it is best to have the opinions of several observers who have no knowledge of the identity of the finishes being tested. Such tests should be solely on the basis of the appearance of the test specimen. Tests should be performed in duplicate, and where a series of materials are being compared, the order in which they are arranged should be changed.

These same precautions apply to the finish manufacturer in the development of a particular finish. By the use of the tests included in this article, the manufacturer can do much of the development in his own laboratory and thus limit the number of samples to be tested and tried in the furniture plant trial. Much of the selection for quality can be made on the basis of laboratory tests. However, in the final trial, emphasis must be placed upon the necessity of close cooperation between the finishing room and the testing laboratory.

The general classes of furniture finishing materials to be treated in detail include wash coats, fillers, sealers, lacquers and varnishes.

Purpose of Wash Coats; Shellac and Substitutes

A wash coat is generally a dilute or "thin" solution of shellac which is applied to furniture in the white. It is the first finishing material applied to the bare wood. Before application of a wash coat the furniture has been sanded until it is smooth. Wood fibers

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Quick warmth and comfort, and quick finishing go hand in hand in the case of HEIL automatic heating equipment, made by the Heil Co., of Milwaukee, Wisconsin.

Warmth and comfort are provided by the unique design and efficiency of HEIL units and the quick finishing of these units is made possible through the use of Berry Brothers MIR-A-TEX, applied as follows:

1. MIR-A-TEX first coat, Low-Lustre Gray;
2. Follow immediately with MIR-A-TEX Tex Coat Clear; one entry into spray booth;
3. Infrared bake 5 minutes;
4. All interiors finished with one spray coat No. 58 Brilliant Aluminum, infrared baked.

Result—a beautiful, durable, distinctive, smooth finish, with maximum eye-appeal.

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Quality Finishes Since 1858

have been matted down to a certain extent by this sanding. It is the purpose of the wash coat to stiffen any raised fibers or grain of the wood and seal the surface so as to prevent excessive penetration of the finishes that follow.

The overall appearance of a finish using excellent lacquers or varnishes can be ruined by a poor wash coat. After application of the wash coat, the furniture is again sanded and a filler is applied. Some manufacturers of low priced furniture do not use an alcoholic solution of shellac as a wash coat, but a water-base wash coat. However, the alcoholic shellac is a much better quality wash coat.

Performance Tests to Apply to Wash Coats

The scarcity of shellac has necessitated the testing and use of various substitutes which have been brought out to replace shellac as a wash coat. Generally about a 4% solution of shellac is used in the finishing room, although this may vary with the type of wood used and certain other plant conditions. More concentrated wash coat solutions may be manufactured and then diluted with denatured alcohol in the factory. The percentage solids of non-volatile matter should be determined for purposes of cost and to find out what is the proper dilution in the finishing room. The drying time of the substitute should be compared to that of shellac so as to fit plant conditions.

Many shellac substitutes have shown a tendency to gel upon standing therefore an accelerated aging test of one week in an oven at 125° F. should be performed on a portion of each sample. The water resistance should be as good as that of shellac. *The naphtha resistance must be checked because many so-called shellac substitutes whiten considerably when exposed to naphtha in the subsequent finishing operations. Where filling closely follows the wash coat in a finishing schedule, the finish may whiten or blush when filler is applied.* The result is a foggy, dull finish. The water and naphtha resistance of a wash coat is best checked by exposing the film to these reagents and comparing the effect of the exposure with sample panels wash-coated by thin shellac.

In a normal finishing schedule, the wash coat is followed, after a suitable drying time, by sanding to cut down and smooth off any raised wood fibers or rough grain. The shellac substitute should be sprayed on a test panel similar to that used in production, allowed to dry, and then sanded a number of times under a standard pressure. The sandpaper should be examined for any gumming or sticking. Any drag is noted during the sanding operation. Shellac will sand smoothly without drag or clogging of the sandpaper. It is desirable to use one panel, of which one half is sprayed with shellac and the other half with substitute shellac, so that the same treatment can be given to both wash coats; then a fair comparison will be easier.

Why Fillers are Used, and What Tests Apply to Them

The filler is generally applied after the wash coat has been sanded, in order to fill in all of the crevices in the grain of the wood and to level off the surface. The wash-coat sanding helped to remove the high spots; the filler serves to raise the low spots.

(Continued on page 82)

CLOTHES FOR BRAIN-CHILDREN

Perhaps you're mulling over a bright idea in your mind . . . maybe it's even reached the blue print stage. When you arrive at the "finishing point" it's time to talk it over with Stanley. Our sole specialty is creating finishing formulas for industry's brain-children and our experience covers a broad range of products. Inquiries incur no obligation . . . write to the Stanley Chemical Company, manufacturers of Stanley Enamels, Synthetics, Lacquers and Japans, East Berlin, Connecticut.

Stanley Chemical

There are few tests that can be performed in the testing laboratory on fillers. A test panel can be prepared and the filler can be applied as it would be in the factory. After the regular production drying time all excess filler is removed with a cloth. Streaking and the ease of removal are noted. The color of the filler is compared to the desired color for the particular suite on the test panel, and on paper held up to light. Color here is an important factor. This is one case where cooperation between the testing division and the finishing room, and between the supplier and furniture manufacturer is important.

Sealer Coats; What to Expect and What to Test

A furniture sealer is essentially a lacquer modified so that the sanding which follows will be easier than if a regular lacquer were used. A high quality lacquer is not especially necessary here because later it is covered with one or more top coats. However, a cheap lacquer is not desirable either, because the formation of a haze or chipping of the sealer can be seen under the top coats. Its chief function is to seal in all of the preceding finishes, so as to form a smooth sealed base for final coats of varnish or lacquer. Sometimes a very thin coating of "glaze"—an oil to bring out the natural color and grain on the wood—is applied over the sealer before the final finish is put on.

Where routine control testing is performed by a testing department it is best to check at least the solids, color, viscosity and drying time of each lot of sealer received. For more thorough investigation a test panel that has been stained, wash coated and filled is sprayed with the sealer to be tested, and with the sealer currently in use for the application. This panel is finished off with sanding, glaze, and the lacquer or varnish in use, and placed through the testing schedule to be described later. Sanding characteristics are compared as with the wash coats. Naphtha resistance is checked in case the filler should not be completely dry when the sealer was applied.

As an illustration of troubles that can result, a mahogany dining room suite demonstrated a peculiar whitening under the surface after the finishing had been completed. *Finishing room foremen were unable to explain the whitening and haziness of the finish until the testing laboratory discovered that the sealer did not have good naphtha resistance and that an insufficient drying time for the filler was being allowed in the plant before application of the sealer.* The haziness in this case was not noticed until the final finish was applied.

Our experience has shown numerous cases where a more thorough investigation of the finishes before use would have saved time and materials.

In the case of sealer, as with all other finishes, the spraying characteristics must be checked in the testing division before the material is used in the plant, because these properties will always be important.

Varnishes and Lacquers; The Top Coat Finishes

From a sales point of view the final finish on furniture is the most important. A high quality top coat is necessary in order to bring out the beauty of the wood

Easy does it...

WITH

FUSION TYPE FINISHES

Red X Fusion Type Finishes offer you the "magic" of applying successive coats immediately, eliminating costly waiting periods between each application. Expensive heat treating equipment also is no longer required. In these and many other ways Red X Fusion Type Finishes are cutting costs for finishing materials users from coast to coast.

Red X Fusion Type Finishes require no special thinners. Wiping stain, filler stain and paste filler reduce with petroleum naphtha: other Red X materials are ready to use. Application is made in the customary manner. Wiping materials clean up easily and quickly. No gummy or sticky residue. Seal immediately or at any subsequent time. Get the complete story of Red X Fusion Type Finishes. Write to Reliance Varnish Co., 917 E. Kentucky St., Louisville 4, Ky.

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and the undercoat finishing treatment. Performance of the top coat over a long period of time controls the appearance of any furniture, therefore more tests are performed on the varnishes and lacquers to be used on furniture. These tests not only determine how the finish will behave in the plant during application and storage, but how the finish will endure when exposed to adverse conditions during use.

The rest of this article comprises a special finish testing schedule especially designed for testing and comparing a new finishing material, such as a varnish or lacquer, against the standard material in use in the plant. This schedule is satisfactory and convenient for recording the results of such tests. Front and back views of a form to fill in appear in Figs. 1 and 2.

The routine determinations that are performed as a control on every shipment of varnish or lacquer used in the plant are also performed on the new material. These are tests for non-volatile matter, drying time, color, clarity, and viscosity. In addition, the following performance tests are performed.

Tests for Cross Drafts

By this test an important property of successful application under adverse plant conditions is

TEST NO._____ ○ ○ START_____
TYPE OF FINISH_____ 24 HRS._____
FINISH SCHEDULE 2 WKS._____

MATERIAL_____ DATE RECD._____ LOT_____ COST_____
STANDARD_____ DATE RECD._____ LOT_____ COST_____

NVR ASTM OLEO RESIN METHOD

S+T			
TARE 1			
SAMPLE			
S+T			
TARE 2			
RESIDUE			
% NVR			

AVERAGE BY

		M	ST
COLOR			
CLARITY			
VISCOSITY			
DRYING TIME	TOUCH		
	HARD		
DRAFT PROOF (6X8 TIN PLATE)			

SUMMARY	M	ST
NVR		
COLOR CLARITY		
VISCOSITY		
DRYING TIME		
ABRASION RESIST.		
GLOSS-CLEARNESS		
SCRATCH RESIST.		
IMPACT RESIST.		
ALCOHOL RESIST.		
COLD WATER RESIST.		
HOT PLATE RESIST.		
PRINT RESIST		
OIL RESIST.		
WEATHERING		
COLD CHECK		

ABRASION RESISTANCE

BY DATE SPIN 3 DISCS AND AGE HRS. SPIN 250 CYCLES ON TABER

NO.	DISC WT.	FILM DISC	FILM WT.	MG/CM²	CYCLES	FINAL WT.	LOSS	INDEX	AVE.

TEST	BY	DATE	CH	METHOD	SAMPLE	STANDARD
U. V. RESISTANCE				FLOW 2 ON PAPER. DRY___HRS. & EXPOSE ONE 6-HRS. COMPARE		
LEVELING				FLOW ON TWO 6X8 GLOSS PLATES. DRY VERTICAL ON LONG EDGE. COMB AFTER 8 MIN. ALLOW TO DRY___HRS. SWARD HARDNESS ROCKER. SOAK FOR 2-4&8 & 24-HRS. BOIL FOR 15-MIN. NOTE RECOVERY TIME		
SWARD HARDNESS					24 HRS. 48 HOURS	24 HRS. 48 HOURS
COLD WATER RESIST.						
HOT WATER RESIST						
FLEXIBILITY ADHESION				FLOW ON 3X6 BLACK IRON PANEL. DRY VERT.___HRS. BEND 180°		
SKINNING				TEST TUBE ½ FILLED & STOPPERED		

Fig. 1—Front side of a standard form 8½x11-in. on which to fill in essential information about any specific finishing material under test.

Standard FINISHES for Every Purpose

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Specialized Production Finishes for

Wood and Metal Furniture
Toys
Office Appliances
Household Appliances
Venetian Blinds
Electrical Equipment
Insulated Wire and Cable
Impregnating Compounds
Metal Decorating, containers, closures, etc.

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Railroad Finishes
all types

•

Marine Finishes
all types

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A complete line of Paints, Varnishes and Enamels

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TOCH BROS., INC.
R. I. W. Waterproofing Compounds
Technical Finishes

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Industrial and Trade Sales

Standard Varnish has over 75 years' experience in the development and research of protective and decorative coatings for varied industries. Our steady growth and integrity have made us an independent leader in the industry.

Quality control and personalized service assure you uniformity and the best products for your specific needs.

STANDARD VARNISH WORKS

Engineers of Products Finishes

CHICAGO

FINISH SCHEDULE					LABORATORY	
TEST	BY	DATE	CH	METHOD	MATERIAL	STANDARD
SPRAYING				SPRAY 4 PANELS (11X14) STAINED, FILLED, SEALED; ONE-HALF WITH NEW VARNISH AND ONE-HALF WITH STANDARD VARNISH. ALLOW TO DRY ____ HRS.		
FLOW						
BODY						
SAGGING						
DRYING TIME					TOUCH HARD	TOUCH HARD
CLEARNESS				VISUAL ESTIMATION & GLOSSMETER. ALSO FLOW ON BLACK GLASS.		
GLOSS						
IMPACT RESISTANCE				HART IMPACT HAMMER & 8-OZ. BALL DROP		
SCRATCH RESISTANCE				HOFFMAN SCRATCH TESTER NOTE FIRST MARK & DEEP SCRATCH & BRITTLENESS.	READINGS	
ALCOHOL RESIST.				ALLOW SCC 95% ALC. TO EVAPO.—5½"D.		
COLD WATER RESIST.				2 & 8 24-HR. CONTACT-RECOVERY Time		
HOT PLATE RESIST.				210 BEAKER WATER AT 140° F. ON PANEL		
PRINT RESISTANCE				7/16 P.S.I. PLACED OVER TISSUE PAPER		
OIL RESISTANCE				OVERNIGHT CONTACT WITH POLISHING OIL		
RUBBING				SAND WITH ±360 OR ±400 WET OR DRY		
COLD CHECK				½ PANEL #2 WITH SAMPLE VS. STANDARD CYCLE 1-HR. AT —5° F. AND 1-HR AT 120° F. RECHECKED		
WEATHERING				½ PANEL #3 WITH SAMPLE VS. STANDARD CYCLE — 2 HRS. SUNLAMP 2 HRS. 120° F. 2 HRS. 40° F. 2 HRS SUNLAMP 16 HRS. R.T. & 100% R.H. RECHECKED		
AGING				PANEL #4 AGED IN STOREROOM AND ON EXTERIOR RACK		

Fig. 2—Reverse side of the 8½x11-in. form illustrated in Fig. 1.

tested. A film of the varnish is flowed on a 6x8-in. tin plate. This varnished test panel is placed in a vertical position but at an angle of 45° to a 6-in. diameter tunnel. A fan is placed at the other end of the tunnel. The fan is positioned so as to force an air stream past the test film. After the finish has dried hard it is examined for dulling, crows-footing, or other flaws. A lacquer or varnish that passes this test can be expected to dry smoothly in the plant in spite of any room drafts.

Almost every article of furniture will receive a certain amount of abrasion or rubbing during normal use. An indication of the way the finish can be expected to withstand this treatment is based upon the test about to be described. With careful technique the method is straight forward and the results are quantitative, thereby eliminating personal judgment. Although other factors enter into consideration, the abrasion test also is a measure of the degree of hardness and toughness of the dry film.

For each finish, three flat discs of hard finished smooth stainless steel are prepared. Each disc is 4-in. in diameter and has a ¼-in. hole in the center. The discs are cleaned, marked, weighed and coated with a uniform film of the finish. The films are dried 48 hours, reweighed, and abraded on

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Users the nation over witness the excellent results to be had with Improved CLINCO wrinkle finishes. CLINCO furnishes the quality finishes for complete satisfaction.

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For quality finishes that assure satisfactory results, count on the CLINCO line. Write today and let us tell you the complete story of the CLINCO line of Improved Finishes which are formulated by our staff of expert chemists and technicians for any surface.

EVERY FINISHING MATERIAL TO FINISH ANY ITEM

- FURNITURE LACQUERS
- IMPOVED SYNTHETIC ENAMELS
- CLEAR AND PIGMENTED METAL LACQUERS

THE CLINTON COMPANY

1210 ELSTON AVENUE CHICAGO 22, ILLINOIS

a Taber Abraser, using Taber CS-10 Calibrase wheels for 250 cycles. Then the discs are brushed clean and reweighed carefully. The loss in weight of each disc, due to abrasion, is calculated and expressed as milligrams per 1000 cycles as the abrasion index. The average index is calculated. The lower the index, the better the abrasion resistance. A flat varnish is not expected to perform as well as a gloss varnish on abrasion resistance.

Resistance of Final Finish To Ultra Violet Light

The resistance of the finish to ultra-violet light is an important property for a quick check to predict darkening or chipping of the finish if it is exposed to sunlight over a period of years. Films of the finish being checked and the standard finish are flowed on paper and glass, allowed to dry 48 hours, and then placed preferably in a Fadeometer or under an ultra-violet light for 24 hours and then reexamined for darkening, checking, chipping, etc.

Leveling; Hardness of Film; Water Resistance

These tests can be performed on one 6x8-in. glass panel. The film is flow coated and allowed to dry in a vertical position for eight minutes. Then a comb having 10 teeth per inch is drawn across one inch of the upper and lower edges of the plate. The film is then allowed to dry for 48 hours. This leveling test is only performed on varnishes. The condition of ridges (if any) that remain along the edges is a measure of the ability of the varnish to level itself if and when the applied coating is slightly uneven. No ridges should be apparent on the lower edge and little trace of ridges on the upper edge. When the two varnishes are tested together the comparison is easy.

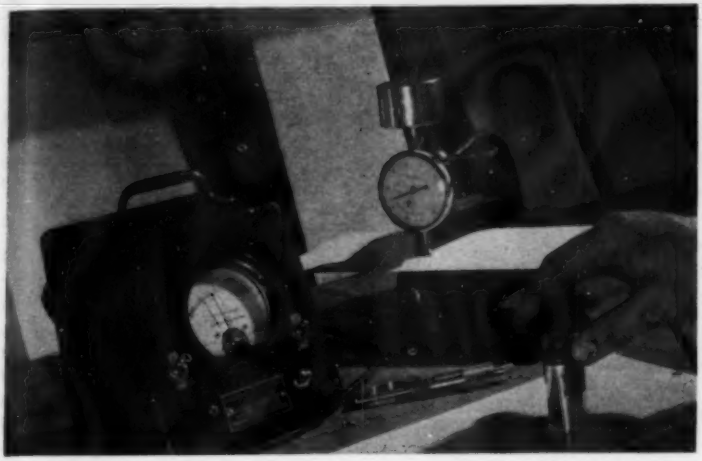
After the films have dried 48 hours their hardness is measured by a Sward Hardness Rocker. The rocker is manufactured by the Henry A. Gardner Laboratory and is designed especially for testing paint, varnish and lacquer films. The rocker is calibrated for 100 against plate glass. The number of swings of the rocker between the times when air bubbles fail to pass special lines on small glass vials mounted at different angles on the rocker is a measure of the hardness of the film. The harder the surface, the greater the number of swings and the higher the hardness index. Hardness of a film is generally measured 24 hours, 48 hours and one week after application.

Cold water resistance is determined by placing a square of absorbent cotton fabric, similar to Chempak, saturated with water

(Continued on page 93)

Here is my article entitled "Physical Testing of Furniture Finishes", or words to that effect, which I have finally found time to complete. I have been very busy in my work and my chemical engineering, so that I have not been able to devote much time to this occupation. However, I hope that these efforts will be stimulating.—

Herbert H. Watjen.
Research Chemist.



This photograph shows the various film thickness gauges, such as the micrometer, dial micrometer and electric gauge. Photograph, Pittsburgh Plate Glass.

on the film. The cotton square is moved along the film so as to expose different portions of it, 2, 4, 6, 8 and 24 hours. The amount of whitening and the degree of recovery to its original transparent condition is compared with the standard for each of the exposure times. Where a boiling water test is desirable the other ends of the panels are placed in boiling water for 15 minutes. These are tests where personal judgment is important but comparison with the standard finish will help in making the evaluations.

Flexibility and Adhesion Are Vitally Important

For this test, films are flow-coated on 3x6-in. black iron panels and allowed to dry vertically 48 hours. Then the panels are bent through an angle of 180° around a ⅛-in. mandrel. The finish is examined for checking, chipping, cracking and loss of adhesion.

The flexibility test will bring out the faults of finishes that may be expected to chip at the corners of furniture over a period of time. It is a relatively simple test and serves as a reliable measure of the "toughness" and lack of brittleness of the film.

Testing Different Finishes On Prepared Panels

The tests on the reverse side of the finish testing schedule as illustrated in Fig. 2, are all made on a panel about 14x14-in. These panels are made of the type of wood currently in use in the plant for the suite of furniture concerned. They are wash coated, sanded, filled, sealed and sanded according to standard plant procedure. The order of finishing might be different in different plants and on different suites. A supply of these panels, with all finishes applied except the top coat, for all different types of

woods, is kept on hand in the testing stock room. Preferably four of these panels are used in order to test the varnish or lacquer over long periods of time.

Panel No. 1 goes through the mill, so to speak. The behavior on spraying one half of the panel with the finish under test is compared to the behavior of the standard varnish when the other half is sprayed. The characteristics of flow, body, sagging, and ease of spraying are given a quality estimate by the sprayer. Naturally it is important that correct spraying techniques be employed. The drying time to touch, and hard, are measured by the usual finger technique. After 48 hours, the clarity and gloss are estimated by eye on the sprayed panel and on a film flowed on a black glass surface. The gloss evaluation is checked by a 45° Photoelectric cell glossmeter to yield quantitative results.

Tests to Indicate Resistance To Impact and Scratches

Impact resistance is measured by allowing an 8-oz. steel ball to drop 3-ft., and by using the Hart impact hammer on both halves of the panel. The amount of shipping, whitening, cracking, etc, is compared. This test, as well as the following tests made on the finished panel, is important to determine beforehand how the finish can be expected to resist adverse conditions when it is in service. From the consumer's standpoint, they are the most important characteristics of a furniture finish.

Scratch resistance can be compared by noting the ease of chipping the surface of the finish by a coin held in an oblique angle and moved along the panel with finger pressure. There are a number of variables in the actual performance of this test so, in an attempt to control some of them, the Hoffman scratch tester is used. In this method, the pressure on a knife edge, as it is moved along the panel, is controlled by a weight hanging on a lever arm on the same side of the fulcrum. Succeeding scratches are made on the panel with increasing pressure. The first sign of a scratch and the first deep mark are noted with the setting of the weight on the graduated lever arm. The greater the pressure required to make scratches, the greater the resistance of the finish. Besides yielding quantitative results, the comparison of scratches between different finishes with the same pressure applied is usually quite direct.

Tests for Alcohol Resistance; Cold Water and Print Tests

The alcohol resistance test is quite straight-forward. Five cubic centimeters of 45% alcohol are allowed to evaporate from a 2½-in. diameter circle outlined by a glass

Testing a sample coated specimen for abrasion resistance on Taber Abraser.

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The quick bake synthetic enamel.

FRANZITE
An air dry or quick low bake synthetic enamel.

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Attractive hammered metal effects; quick baking.

RIP-PLS
The superior black wrinkle finishes.

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BLACK CRYSTAL
The real sparkle finish.

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Specialized lacquers for Fluorescent Fixtures.

LACQUER FOR FLUORESCENT LIGHTING FIXTURES

and other metal equipment for interior use

- White Lacquer Enamel for the reflector surface.
- Pale Clear Lacquer for bright metal surface.
- Aluminum Bronzing Lacquer for metal shells.
- Gray Lacquer Enamel or other desired color for the outside of the metal reflector.

All these lacquers are suitable for metal objects which have interior exposure.

SEND FOR SAMPLES.

HILO

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marking pencil on the wood panel. The finishes are compared immediately upon evaporation and after a one hour recovery period for any whitening or softening.

The cold water resistance test is performed on the sprayed panel in the same manner in which it is performed on the glass panel.

For a hot plate resistance, a 250-ml. beaker or an 8-oz. glass of water heated to 140° F. is placed upon the finished test panels after a 48-hour drying time. When the water has cooled to room temperature, the beaker or glass is carefully lifted from the panel. Any tendency to stick is noted. These heat resistance tests are important from the consumer's point of view. Without a finish testing schedule, these resistances cannot be checked in the plant. However, their importance cannot be overlooked.

A print resistance test was devised when it was discovered that some finishes were sticking to the wrapping paper within the shipping crates during certain weather conditions. A weight of 2½-lbs. per square inch was placed over tissue paper on the panel for 24 hours. Any sticking of the paper to the panel was sufficient to fail in the test.

Tests With Rubbing Oil; Producing Cold Checks

Another test designed to prevent a recurrence of a finish failure in the plant is the rubbing-oil resistance test. By an overnight exposure of the sprayed panel to a pool of rubbing oil and an examination of the film for whitening after the test, this point is checked on every varnish.

The rubbing characteristics of the varnish are best tested in the plant under the actual conditions used, but if desired the test panels can be rubbed in the testing laboratory. The same type of oil or water, pumice, or sandpaper should be used, and all factory conditions should be duplicated as nearly as possible.

Panel No. 2 goes through a series of cold check exposure tests. The panel is placed alternately for one hour at 6° below zero (F.) and 120° F. This is continued until the first sign of cracking appears. If the cracking starts fairly rapidly, the test can be continued to note the extent of cracking. The number of cycles required for checking is a measure of the cold check resistance and is an indication of how the finish can be expected to perform through real quick temperature changes.

Panel No. 3 is exposed to a Weatherometer until the appearance of one of the finishes changes. In the absence of a weatherometer, the following exposure cycle is recommended for the panels: Two hours under ultra violet lamp, 2 hours at 120° F., 2 hours at 10° F., 2 hours under U. V. lamp, and 16 hours at saturated humidity in room temperature. As with the cold check test, these 24-hour cycles are repeated until the finishes show signs of deterioration of some sort.

These exposures together with panel No. 4, which is exposed to atmospheric conditions on the roof, form a good indication of the appearance of the finished furniture over a period of time. In many respects these exposure tests are some of the most important tests that can be performed because they merely exaggerate the real service conditions that most all furniture meets eventually.

However, besides these exposure tests, the finish must perform well

Plastic Finish Problems Solved!

No single so called "all purpose" finish can be used to advantage on every plastic product. Innumerable tests in our laboratory have proved that fact.

The big problem (now solved) has been to get a lustrous white, or soft pastel colors, or sparkling iridescent finishes to adhere tenaciously to the black or dark colored phenolic plastics over which it is applied—with a surface film that defies scratching and is chip and crack proof.

We have been highly successful in producing such finishes by formulations built to fit each particular type of plastic used on products ranging from electrical appliances to toilet seats.

So—send your finish problems to us—let us develop a "custom built" finish for your needs—one that will meet your requirements. Our wide and unusual knowledge of and experience with finishing problems are at your service.

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OUR PROPOSAL TO YOU

Without cost or obligation to you we will be glad to have our skilled chemists and technical engineers of our laboratory examine your requirements, submit recommendation and demonstration for improvement in finish, lowering of costs (or both) without sacrifice of quality.

against other tests listed herein. The evaluation of the best varnish out of a series tested depends on several variables. A practical knowledge of plant conditions and some experience in the testing of finishes is necessary to weigh the tests described correctly, and to arrive at a conclusion that one particular varnish is better than all others tested.

Corrosion Engineers Conference

The National Association of Corrosion Engineers' Conference and Exhibition will be held at the Palmer House in Chicago April 7-10, 1947.

E. J. Young, Design Engineer for Production Methods, Inc.

Eric J. Young, has joined Production Methods, Inc. (N. Y. C.) as Senior Design Engineer. Mr. Young has been active in the electronic and mechanical engineering fields in England, Iraq, Palestine and Venezuela for more than 20 years. He was a project engineer for Western Electric Co. at Kearney during the war, and since then has been engaged on design and research engineering for the S. S. White Dental Mfg. Co., at their Staten Island plant.

Fire Prevention Conference Called by President

Faced with an average annual toll of 10,000 deaths from fire, together with property loss which exceeded $560,000,000 in 1946, President Truman is sponsoring a nation-wide effort to cope with the fire menace.

The President's Conference on Fire Prevention is now past the formative stage and a volunteer staff is at work preparing for the meeting, which will be held May 6 to 8 in the Departmental Auditorium in Washington.

Representatives of municipal and State governments, Federal agencies, and of non-official organizations with a basic interest in fire prevention have been organized into a coordinating committee to draft an agenda for the Conference and to appoint committees which will prepare recommendations to be submitted to the Conference as a whole.

Yarnall Paint Company Holds Annual Sales Convention

With its entire Eastern Sales Force attending, the Yarnall Paint Co. held its annual Sales Convention at the Bellevue Stratford Hotel in Philadelphia, February 13 and 14.

Members of the Sales Force stayed at the hotel for the duration of the Conference. The meetings were presided over by B. F. Swackhamer, Vice-President. Speakers included Mr. Swackhamer, Wm. MacKnight, President; F. M. McNerney, Tehnical Director; Robert MacCreight, Chief Chemist; and Horace Bentley, Sales Service Technician.

Meetings were devoted to discussions of the current raw material picture, prices, products, the use of color, the general sales and advertising program and closed with a review of the Company's post war and expansion plans.

Part of the convention was held at the general offices of the Company where members of the sales force were conducted through the laboratory and factory in groups and shown new plant and laboratory equipment. Part of the convention was also devoted to personal conferences by salesmen with the department executives.

John W. French, Sales Manager of Finishes for Arco

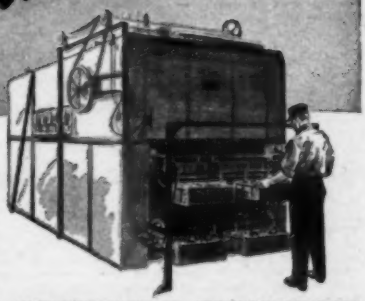
Appointment of John W. French as sales manager of the Production Finishes Department of The Arco Co. is announced by Howard E. Wise, President.

French joined the Arco organization in 1940. A graduate of New York University in Business Administration, he served as a combat medical officer with the 80th Infantry Division in France. He has served as assistant sales manager since his return in February, 1946.

John W. French, Arco Co., Cleveland.

WAA OFFERS AT LOW COST

Industrial Ovens



Baking and drying ovens, of specifications, sizes and types in common use but which today are not readily available, can now be purchased for prompt delivery from the War Assets Administration. Regardless of your specialized requirements, the odds are in favor of your needs being satisfied from this extensive surplus stock. Prices are so low that ovens may be converted from their original use when this is desirable and still permit a substantial saving to the purchaser.

There are ovens for the following uses: for baking lacquer, enamel, synthetic resin, japanning, for low temperature metal heat treating, for drying and curing chemicals, rubber, paper, lithographing, plastics, ceramics, etc.

Principal inventories are located at: Boston, Chicago, Cincinnati, Cleveland, Minneapolis, New York, Philadelphia, Richmond, St. Louis. Write the above Regional Offices requesting that your name be placed on their mailing lists for this type of surplus.

All furnaces offered subject to prior sale.

ALL PURCHASES are sold under existing priority regulations. VETERANS OF WORLD WAR II are invited to be certified at the War Assets Administration Consigning Office serving their area, and then to purchase the materials offered herein.

EXPORTERS: Your business is solicited. If sales are considered at various levels, you will be considered as a wholesaler. Any inquiries regarding export control should be referred to Office of International Trade, Department of Commerce, Washington, D. C.

See our display booth at Western Metal Exposition and Congress Show at Oakland, California, March 22 to 27, 1947.

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Offices located at: Atlanta • Birmingham • Boston • Charlotte • Chicago • Cincinnati • Cleveland • Dallas • Denver • Detroit • Fort Worth • Helena • Houston • Jacksonville • Kansas City, Mo. • Little Rock • Los Angeles • Louisville • Minneapolis • Nashville • New Orleans • New York • Omaha • Philadelphia • Portland, Ore. • Richmond • St. Louis • Salt Lake City • San Antonio • San Francisco • Seattle • Spokane • Tulsa

Letters from Readers

Heat Resistant Paint

We have an application in our plant for a free flowing, high temperature resisting paint which will not discolor at a temperature of approximately 700° F. when exposed to this heat for a period of one hour.—A. Corp.

In a letter we have submitted names of concerns who, we believe, can supply what you want.—Ed.

Fire-Resistant Paint For Wood

We are interested in securing a paint, preferably white, that makes wood fireproof enough to be acceptable to the insurance underwriters. Generally, the insurance underwriters require wooden doors to be covered with some kind of metal, but we understand there is some paint on the market that practically makes wood fireproof. We would like to have some of this paint.

We are also interested in a clear material that will waterproof or plasterize strips of paper.—C. & H.

Flock Finishing

I shall esteem it a courtesy if you will let me know the address of Mr. J. Donald Bostrom, President, Screen-printing and Flocking Industries, whose article about flocking appears in Feb. issue of I. F., beginning on page 80.

We are receiving some inquiries about examples of flock finishes being used for the interior finishing of buildings for the purpose of helping to absorb sound, and are wondering if you have published any thing in previous issues of Industrial Finishing in reference to such use of flock finishes.

In regard to Mr. Bostrom, it occurs to me that he might have some information about the use of flock finishes in specific structures, which might be cited as examples of the architectural use of flock finishes.—N. P. V. & L. A.

We suggest that you write Mr. Bostrom at 1125 Winona St., Chicago 40, Ill.—Ed.

We have read the very interesting article on finishing airplane interiors with flock, which begins on page 78 of the January 1947 issue of Industrial Finishing Magazine. We would like to secure 12 tear sheets of this article. Tear sheets of any other articles you have on flock would also be appreciated.—P. R. Co.

Tear sheets supplied.—Ed.

Plastic Coating Offered for Bowling Pins

On page 96 of January issue, S. H. S. inquires about a plastic coating for bowling pins. We believe that our No. 410 Coating is just the article he is looking for. We are sending a bulletin describing the general properties of this coating for your information, and we would appreciate the name and address of this inquirer so that we may send samples.—Plastic Coating Co., Los Angeles.

We notice an inquiry for a "Protective Coating for Bowling Pins" in the January issue of your magazine, by S. H. S. We would be interested in getting in touch with the inquirer, as we have developed a finish for this purpose that is proving satisfactory.—G. J. Liebich Co., Chicago.

Paint Circulating Systems

We are planning to spray the metallic bronze enamel on burial caskets and will use six sprayers. We would appreciate any information which you could give us regarding paint circulating systems. Tear sheets on previous articles would be appreciated.—F. B. G.

Articles on this subject appeared in Feb. 1946 and June 1944 issues of this magazine.—Ed.

"Gel Lacquer"

We would like to get in touch with lacquer manufacturers who make "Gel Lacquer." Could you give us the names and addresses of these manufacturers?—F. A. Co.

Gel lacquers were invented in the laboratories of the Eastman Kodak

Remember Pearl Essence for

A Decorative Finish

MEARLMAID Pearl Essence is being used on hundreds of different products to produce a decorative and attractive effect.

Investigate the numerous advantages of a Mearlmaid Finish before you select the final coating. Its sales appeal and merchandising value are important.

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Has High Reflective Light Value

For Dials Controls Instruments

WORLD'S LARGEST PRODUCER OF PEARL ESSENCE

Co. Rochester, N. Y. Eastman has been sending a man around to the various Production Clubs, and they put on a very fine talk and demonstration. They will license finish manufacturers to produce gel lacquers under their patent.

These lacquers require accurate temperature control in order to function properly. When applied by someone who knows how to handle them, they do a gorgeous job. A one-coat dip of a wooden file handle comes out looking as if it were a solid piece of plastic. You could probably get all the information you want by writing directly to Eastman. —P. B.

Pre-finishing Wood

We are eager to get information on the pre-finishing of wood. By this we mean the use of abrasives in getting the wood to a condition for proper finishing.—B. W. Co.

Some articles in this magazine have touched on the subject mentioned. For further information we suggest that you contact the leading manufacturers of sandpaper.—Ed.

Spray Painting Numbers

In the January issue of Industrial Finishing we are interested in an article written by P. C. Bardin on "Spraying Color Through Form Fitting Masks." Our problem concerns the spray painting of license numbers on the skin surface of airplanes. At present we are using paper stencils made by C. Co., which furnishes us with block type alphabetical letters and M. C and K with numerals 1 through zero inclusive, 5-in. high and 24-in. high. These stencils are applied to the surface of the airplane which is corrugated. After spray painting, the stencils are removed.

From the text of the article, it is believed that a saving in cost could be effected by using the type of masking described in the article. It is requested that further information, literature and prices be forwarded to the writer which might help us to effect a saving in material and labor.

Another phase of our painting job requires the purchase and application of decals and it is thought that the method described by Mr. Bardin could be used for this application also.—Republic Aviation Corp.

We are referring your inquiry to Conforming Matrix Corp., Toledo Factories Bldg., Toledo 2, Ohio.—Ed.

Standard Varnish Works Holds Annual Meeting

At the Annual Meeting of the holders of common stock of Standard Varnish Works, the following four men were added to the Board of Directors of the company: J. P. Jordan, A. J. Keatly, H. H. Rittenhouse, Jr., and C. F. Leach. These men have been connected with the company for many years. Messrs. Jordan's and Keatley's headquarters are in Chicago; Messrs. Leach's and Rittenhouse's are in New York.

The same officers of the company were re-elected.

In his report to the stockholders, the President stated that profits before Federal Income Taxes for the year ended October 31, 1946, were the largest in the history of the company, and that the outlook is excellent.

Harley Williams Heads Phenoglaze Sales

Harvey Williams is the newly appointed sales manager of Phenoglaze Sales Corp., 315 Broadway, New York 7, N. Y. This concern has been organized for the sale of Phenoglaze, the phenol-formaldahyde protective coating against acids and alkalis manufactured in England for use on all types of wood and metal products.

Before joining Phenoglaze Mr. Williams was president of Williams Marine Contracting Company, Inc., which has been in business in Erie Basin, Brooklyn, since 1840.

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Since 1919

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INDUSTRIAL FINISHES

Lacquers
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Questions and Answers

High Solids Lacquer

What is meant by the term "High-Solids Lacquer?" If H. S. lacquer has a greater percentage of solids isn't it too "thick" or "heavy" to apply by spraying, dipping, roller coating, etc.? If so, does it have to be thinned by adding solvents or thinner, or by heating it? Does it have to be applied by special equipment? Is it available in both clear and colors?—J. F.

Editor's Note: We believe that a reasonably accurate and authoritative answer to your question is supplied by some of the copy in a well known manufacturer's recent folder on this subject. The copy is edited slightly to take out any real or implied "commercials." The copy is as follows:

Lacquer is made up of solids, such as nitrocellulose, resins and pigments, dissolved in a volatile solvent that evaporates, leaving behind a film which is the protective coating.

The term "high solids" lacquers, describes formulations in which the solids content per gallon of lacquer has been appreciably increased. While this means that a lesser amount of solvent is required, these high-solids lacquers are no thicker or harder to use than lacquers of less solids content.

This development in lacquer technology is the fruit of years of laboratory and field research by the lacquer industry. The more important factors in developing high-solids lacquers are:

1) Viscosity of the nitrocellulose.
2) Solvent system used.
3) Ratio nitrocellulose to resin.
4) Choice of resin.
5) Temperature of application.

Because each use presents its own problem, every lacquer is individually formulated to fit certain requirements of the users. The lacquer industry has already developed numerous formulations for these high-solids lacquers to make them adaptable for a wide number of applications.

The chief merits of high-solids lacquers is that fewer coats are required to build up a given thickness. For example if it took five coats of "thin" lacquer to produce a satisfactory finish on certain products, it may take only two or three coats of high-solids lacquer. It takes less solvent to prepare these new formulations.

They still possess the known merits of lacquer—quick dry, durability, gloss, depth and unlimited range of color, print and mar resistance, ease and speed of application. High-solids lacquers save time and cost without sacrificing quality of the finish.

Research on these high-solids lacquers was begun with clear lacquers. The best of these tested formulations were then used in pigmented lacquers. Outdoor exposure tests of panels show that high-solids pigmented lacquers,

QUALAVITE

tested for Resistance

QUALAVITE has been formulated to produce a finish that will positively resist the ravages of alcohol, water, moderate heat, abrasion, impact and will not scratch white seven days after application. This super lacquer has been laboratory tested to stand the "gaff." It is hard and retains its flexibility and permanency indefinitely. QUALAVITE is as modern as the atom bomb. If you do not know QUALAVITE 100E, then your use of it will prove its efficiency. Write for quotations.

Manufactured by the Makers of

AMERICA'S FINEST PADDING LACQUER

QUALASOLE

QUALATONE PRODUCTS INCORPORATED

21 GAY STREET **NEW YORK 14, NEW YORK**

like clear lacquers, are satisfactory. These tests are continuing.

Clear high-solids lacquer formulations have been tested for application on metal parts and other articles. Results of these tests have demonstrated their merits.

Lacquer won its spurs as a protective coating in the early 1920's. It was quick-drying nitrocellulose lacquers that made possible the great mass production of automobiles on the assembly line. Previously, it had taken days and weeks to paint a car. Sprayed with lacquer, however, newly made automobiles were coated with a glistening, durable finish in a few hours.

While the chemistry of making a finish out of nitrated cellulose had been known since the middle of the 19th Century the development of lacquer had to wait until cheap, abundant solvents could be found. Solvents that met these requirements were first developed during World War I.

The next task confronting lacquer chemists was the problem of reducing the viscosity of the lacquer solution. If it were too thin, it took too many coats to finish a car or a piece of furniture; if too thick, it couldn't be sprayed on the surface. It was found that the viscosity of the nitrocellulose largely governed the viscosity of the lacquer.

In the early years of modern lacquer, only about 5% of the spray was solids content. Through various technical improvements, and by using lower-viscosity nitrocellulose grades, this percentage rose to approximately 20% in pre-war finishes. The new high-solids nitrocellulose lacquers climax this trend. It is now possible to apply lacquers with as high as 35% to 40% solids.

Will Waxing Harm Lacquer Finish?

We are manufacturers of skis, toboggans, and snow shoes. For a finish on skis we are using a specially prepared lacquer. It was suggested to us that we should wax the skis as soon as they have had the final coat of finish. However, before we do this we would like to find out if a wax such as "Johnson's Furniture Wax" would do any harm to the finish on the skis. We have been told that to put wax on skis would be detrimental to the lacquer coat, if allowed to stand in stock very long. Will you kindly give us your opinion?—C. L. Co.

We have consulted some expert chemists and finishers and they are of the opinion that an ordinary wax would do no harm to a lacquer finish—provided the lacquer finish is allowed adequate time to become thoroughly dry before the wax is applied—and provided the wax contains no solvent that might possibly attack the lacquer.

We suggest that you take this matter up with the manufacturer of the wax, advising him of the conditions, and ask his opinion about whether or not there is any possibility of any solvent in his wax attacking the lacquer coating.—Ed.

Light Spots on Lacquered Top

I had some furniture in storage for a short time last summer and something that was placed on a library table caused a light spot. I made this table myself and I finished it in clear lacquer. I also have a dining table that has light

This gorgeous young lady is carefree, unconcerned, heedless of important things. Her outlook comprises the very attitude manufacturers cannot afford to take . . . especially when selecting a finish for products.

In other words, ordering "any old" coating just to get finishing room problems off your mind is costly in the long run. Rather, it is more advisable to contact our Creative Studio and get a finish conceived *expressly* for your merchandise.

Send us your specifications and a sample to be coated. Reputable firms may enjoy this specialized service at no cost or obligation.

No Tampering with Quality

ROCKFORD VARNISH
Company
ROCKFORD ILLINOIS

Manufacturers of Protective and Decorative Coatings

colored spots which may be the result of hot dishes.

I am familiar with removing such spots from a varnish finish, but these spots on lacquer have me stumped. Can you give me information on the removal of such spots, without refinishing?—M.A.L.

The white spots may be removed by applying lacquer retarder to the affected parts by spraying, or with brush or cloth if you are familiar with patching or touch-up work. Just apply the retarder evenly with any of the above named applicators one or more times, and the lacquer will respond to the treatment. The only exception would be a flat lacquer that is stearated too heavily; that is a dead flat lacquer.

After the spots have been removed, there most likely will be a glossy spot. This may be treated by rubbing the surface with pumice and oil.—FRED BOYNTON.

In regard to removing light spots from clear lacquer, I would suggest the following method which I think will remove the spots:

Spray a mist of any commercial lacquer retarder. Repeat with second coat in about 30 minutes, if first coat doesn't remove spots. Let this dry over night and then repolish the piece of furniture so as to remove the dull film caused by the application of the lacquer retarder.

If the spots have been caused by water or moisture, this method should remove them. — H. W. CHESTER.

Here are a few suggestions for removing surface stains such as white rings, water marks, etc., from a lacquer finish.

If the finish has not cracked and the discoloration has not penetrated to the wood itself, the use of ordinary furniture rubbing compound should remove the spot. Use the compound wet at first and, as the solvents evaporate through friction, the compound will polish the finish to any desired sheen.

If this does not remove the stain, try using a very fine sandpaper (No. 9/0 or 10/0) dipped in benzine as a wetting medium and sand the spot lightly until the ring disappears. This should take only a few seconds. Be careful to avoid sanding through the surface. Then follow with the rubbing compound as previously suggested.

Many of these stains can be removed also by the use of oil or grease such as white mineral oil, paraffin oil, or ordinary vasoline; and some method of applying the oil to the surface while hot. One method: Heat the oil to a fairly hot temperature; dip a piece of woolen cloth into it and rub the stained place briskly with the saturated cloth until the stain disappears. Repeat if necessary.

Another method: Saturate a piece of flannel or wool with oil and lay it over the stain. Then take a hot flat iron and pass the iron over the cloth, but do not let the iron lay too long on one spot, as you might blister the finish. Repeat until the ring disappears.

Still another method—but it is risky unless in the hands of someone with finishing experience—is to take a piece of cheesecloth and pour on about three or four tablespoons of paraffin oil, then saturate the cloth with alcohol. Wring out the saturated cloth and shake it in the air. This will remove most of the free alcohol, leav-

(Continued on page 112)

Liquid Glue

PURE HIDE

—for the Furniture Industry

SAVLOID is not a fish glue. It is made only of the best hide stock glue and formulated so that it will not disintegrate or lose its adhesive strength. **SAVLOID** is the strongest liquid hide stock glue made.

SAVLOID is practical, because in liquid form it is always ready to use. Its quick, hard-drying qualities and uniformity of texture make **SAVLOID** a real economy for production line requirements.

Write for information and quotations.

Hardwood Finishing Headquarters Since 1888

Behlen's have the most complete line of finishing materials. Color charts for Fillers—Liquid Stains—Bronze Powders—Aniline Stains, etc., as well as catalogues of complete listings are available upon request. Write.

10 Christopher Street, New York 14, N. Y.

ing only enough to create some alcohol fumes; roll into a ball or pad to fit the palm of the hand and pass this pad over the white spot, touching the spot lightly each time. fumes; roll into a ball or pad to fit the palm of the hand and pass this pad over the white spot, touching the spot lightly each time. Repeat until the spot disappears. The oil will prevent the cloth from sticking to the finish and the alcohol will have just enough solvent action to slightly soften the finish and remove the spot. But be careful.

If these suggestions do not do the work, the stain has probably penetrated into the wood and should be looked at by an experienced finisher.—E. HOGSTROM.

Mahogany Stain Bleeds Through Gold Stripe

We have a finishing problem which we hope you can solve for us. In the application of gold striping (bronzing liquid medium) on lacquer finished mahogany stained wood there is constant bleeding. We have tried various methods and mediums in mixing the bronze powders, but with little success. How can this be remedied?—F. Co.

There are a number of ways to overcome this trouble, but I believe that a simple method would be to change the type of mahogany stain being used. From the description of your trouble I assume that the stain being used is of the aniline type in alcohol solvent, or oil and benzol. These stains will bleed, more so if too little drying time is allowed before finishing with surface coats.

I would suggest a N. G. R. (non-grain-raising) type of stain, made to be non-bleeding; or better still, if you have the time for finishing, use a water stain. Of course, some of the real bright red mahogany colors, even in N. G. R. stains, will bleed if white is sprayed over them, but they should not bleed into a bronzing lacquer and bronze powder coating.

As a suggestion for a different bronzing liquid medium that should not bleed through, try using one of the quick-drying synthetics that can be coated over with lacquer without lifting or crazing. Your finishing supply house should be able to supply this.

Another medium is S. S. cotton solution. This is a water-white clear straight cotton solution that is cut in moisture-free alcohol. This material sets and dries rapidly, so when bronze is mixed with it, it must be used at once. To slow the drying, use butyl alcohol as a reducer. This S. S. solution can also be mixed with your regular bronzing lacquer in different proportions to help.

Another method is to use shellac as a sealer coat instead of lacquer sealer. This will usually stop the trouble if the mahogany color is not too strong.—E. HOGSTROM.

Hercules Opens Office in Cincinnati, Ohio

The Cellulose Products Department of Hercules Powder Co. has opened an office in Cininnati, Ohio for the sale of cellulose chemicals to plastics, paint, lacquer and other manufacturers in the Cincinnati area.

Henry Grace, formerly in charge of the department's Washington, D. C. office, is manager of the new office. Besides selling cellulose chemicals, he will provide technical assistance to customers.

Temporary headquarters are at the Netherlands-Plaza Hotel. The staff will move soon to permanent quarters in the Carew Tower.

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SPEED UP PRODUCTION WITH NEW PERIOD LACQUERS

High labor costs have compelled many manufacturers to improve production procedure, speed up schedules and reduce man hours per unit of production. New Period Lacquers have been developed and formulated to meet the most exacting requirements of fast modern production schedules.

The complete New Period line includes sealers, gloss, semi-gloss, clear and pigmented lacquers. They are formulated for various methods of application and for any production setup.

A production sample will convince you of its superiority.

Our complete line of New Period finishes and our laboratory facilities are at your service. Write us!

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ESTABLISHED 1917

NEW YORK WOODFINISHERS' Supply Co.

109 IRELAND STREET BROOKLYN, N. Y.

Materials Supplies Equipment

New Heavy Materials Gun Announced by Black

The Black Mfg. Co., 1425 W. Baltimore St., Baltimore 23, Md., manufacturer of Black Arrow "Hollow Air" paint spray equipment, announces that it is now in position to supply its new heavy materials spray gun, to be known to the trade as the "Muff-Gun."

"Muff-Gun" to spray heavy materials.

The "Muff-Gun," produced to meet urgent requests for such a gun, is designed specifically for the application of all types of heavy materials.

The manufacturer states that, based on exhaustive tests, the "Muff-Gun" sprays about 10% faster on pump hook-ups because obstructions in fluid passages have been reduced to a bare minimum. Fast spraying, plus the fact that less air is required by the "Muff-Gun," makes it economical to operate. A steady, smooth flow of material is obtained because of the gun's improved nozzle and valve design.

The "Muff-Gun" is supplied in two models which are identical except for size of fluid and air connections. It may be used with either a pump or pressure hook-up. Adaptors are available for both fluid and air connections. Model B-2500A has a ¾-in. male straight pipe thread on fluid inlet while the air inlet is ⅜-in. straight pipe thread male. Fluid connection on Model B-2500L is ½-in. female tapered pipe fitting on fluid inlet, while air inlet is ¼-in. tapered pipe thread male. Each model weighs 26-oz. net.

Improved Respirator

The M. S. A. Clear-Vue Dustfoe Respirator combines improved wearing comfort and better appearance with complete breathing protection against every type of nuisance or harmful dust encountered in industry, and is offered by Mine Safety Appliances Co., Braddock, Thomas and Meade Sts., Pittsburgh 8, Pa. This respirator has a facepiece of formable aluminum which insures a comfortable fit on any face. A

If the 10,125 Pratt & Lambert paints, varnishes and lacquers won't exactly meet your needs, we'll make you some that will!

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soft, flexible face cushion provides a dust-tight seal. The filter container is made of tough, transparent plastic, permitting visual check of filter position, type, and condition. Economical, single, throwaway-type filters are colored to facilitate instant recognition.

The green Type AC filter has an especially low breathing resistance and is recommended for pneumoconlosis-producing and nuisance dusts and mists, and for heavy, fast-clogging dust concentrations. The All-Dust Type is red, providing maximum filtering efficiency against all dusts, and is recommended for protection against such toxic dusts as lead, cadmium, manganese, etc.

Power Shaker Screen

A portable motor-driven shaker screen for use with deburring and finishing barrels is announced by Almco Inc., 231 E. Clark St., Albert Lea, Minn. This unit quickly separates the finished work from the tumbling medium, eliminating all hand screening and sorting.

The screen vibrates in an elliptical path at 380 reciprocations per minute. Length of movement is adjustable from zero to ¾-in. to meet all requirements. Interchangeable wire screens are available in standard size openings.

One screening unit will normally serve three or four barrels; and with casters at one end and a handle at the other, it is readily moved where needed.

Portable motor-driven shaker screen.

"Zincilate," Anti-Corrosive Treatment

"Zincilate," an anti-corrosive process which affords 20 years protection to ferrous metals against all common corrosive forces, is announced by Industrial Metal Protectives, Inc., Dayton, O. "Zincilate" has been used successfully on pipelines; on the interiors and exteriors of water and gasoline tanks and bridges; on machine parts, and on marine installations where it affords not only anti-corrosive but also anti-fouling service.

"Zincilate" is unaffected after 1000 hours exposure in standard salt fog corrosion equipment, as approved by the American Society for Testing Materials. Maximum specifications for the Army and Navy require only 200 hours of salt spray exposure.

"Zincilate" is a "one coat" protective coating. It possesses remarkable abrasion resistance. Even when sizable areas are destroyed by unusual scraping or wear, lasting protection is assured through cathodic sacrifice of the film.

Behr-Manning Offers Cut-to-Length Flock

Behr-Manning Corp., Troy, N. Y., announces a complete line of cut-to-length rayon flock for industrial flock finishers. The new product is "free-flowing," covers

A Fine Protective FINISH for High Production Tools

Specialized finish of high quality is required to protect the surfaces of high-production automatic tools . . . and specialized finish of high quality is what Egyptian supplies, always.

Egyptian offers the right finish for every requirement. If your needs are for standard finish, or for something very special, you can safely rely on Egyptian. Inquiry is invited.

THE EGYPTIAN LACQUER MANUFACTURING COMPANY

SPECIALIZED PRODUCTION FINISHES

P. O. BOX 444, NEWARK, N. J

readily and yields a dense, uniform, velvet-like finish of unusually fine decorative and functional properties.

Culminating over ten years of research in the manufacture and coating of flock in its Electro-Textile Division, the Behr-Manning Corp., leading manufacturer of coated abrasives since 1872, claims to have developed a product of great beauty and uniformity.

The announcement offers to industrial flock finishers, a new Behr-Manning booklet and color guide "Flock Finishing." Write to Behr-Manning Corp., Troy, N. Y., Electro-Textile Division.

Plastic Masking Liquid

"Plask," a new and different masking liquid has been developed, laboratory tested, commercially used and proved, according to the manufacturer, The Servwell Products Co., Inc., 6523 Euclid Ave., Cleveland 3, Ohio.

It is a plastic paint-spray-protector which is applied with a brush like paint; dries in less than five minutes; provides complete paint spray protection; is waterproof and airproof; can be peeled off easily in large sheets.

"Plask" is recommended for glass and all types of unfinished, plated or finished non-porous metal surfaces including baked synthetic enamel. It is economical to use. Only one thin coat is required. One gallon spreads to about 200-sq. ft.

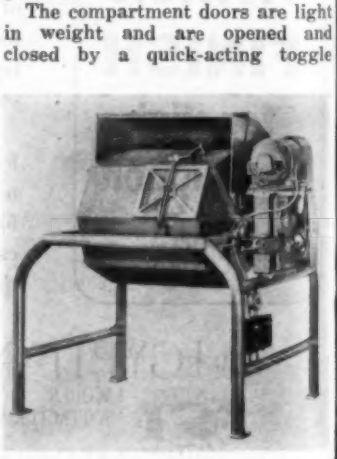
"Plask" is also available in special compounds to meet specific industrial requirements, such as paint spray booths, paint conveyors, preventing rust, masking windows to decrease intense sunlight, etc.

Motor Driven 4-Speed Tumbling Barrels

Almco Incorporated announces a line of 11 octagonal deburring and finishing barrels 30-in. in diameter and 32 to 60-in. in length, with nine standard compartment sizes from 12 to 60-in. in length. Design features include 4-speed drive, quick-clamp doors and welded steel construction throughout.

These barrels are furnished either plain (unlined) or with full neoprene lining. They are motor-driven at about 10, 15, 20 or 30-rpm through a speed reducer and 4-step V-belt pulleys. A lever-operated belt release mechanism permits quick selection of the desired speed. To facilitate positioning of the barrel for loading and unloading, rotation in both directions is controlled by a start-stop lever which applies a hydraulic brake when the barrel is in "stop" position.

The compartment doors are light in weight and are opened and closed by a quick-acting toggle



New motor-driven, 4-speed, steel tumbling barrel, lined or unlined.

this, Mister,

is an Easter seal

It's only a small piece of crinkly edged paper with a back that's mighty sticky when it gets wet . . .

Maybe it doesn't look like much, but I know a lot of kids who see plenty in this little Easter seal . . .

They see wheel chairs and crutches to help them get out and do things—

They see a school, and others see a ride to school . . .

Lots of them see camp . . . camp in the summer, good hot sunshine, real trees, acres of sweet-smelling green grass, and swimming, playing . . . like other kids . . .

But don't get me wrong, mister—they don't really *see* all this. These kids just dream it, because that's what they can have with the dollars you spend for Easter seals . . .

Gosh, mister, it's wonderful of you to give us a chance to be like other kids!

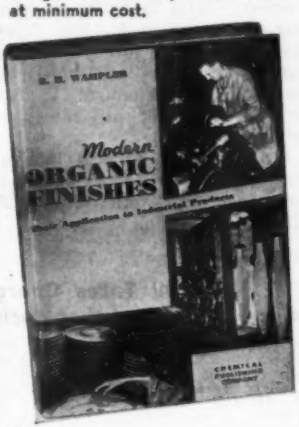
BUY AND USE

EASTER SEALS

NEW BOOK

(452 Pages)

Descriptions of modern finishing materials and equipment for their application, drying and conveying are presented so that the reader may have an over-all picture of modern industrial finishing operations. Throughout, the main emphasis is on proper selection and use of materials and equipment to get the best possible finish at minimum cost.



Contents:

Sec. I. Modern Organic Finishing Materials—3 chapters.
Sec. II. Modern Application Methods—5 chapters.
Sec. III. Drying Methods — 3 chapters.
Sec. IV. Product Handling in the Finishing Department—1 chapter.
Sec. V. Finishing Processes—11 chapters.
Sec. VI. General Considerations—2 chapters Bibliography and Index.

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clamp. The clamping lever permits the door to be cracked open for draining before unloading. All doors have a water-tight sponge rubber seal with a take-up adjustment to compensate for eventual compression of the seal.

All Almco barrels are mounted in a welded tubular steel frame, giving free access to the doors for loading. To permit unloading directly into a work pan or onto a screen, there is 28-in. clearance beneath the barrel. The barrel itself has an approved guard rail and pull-down safety hood, and the driving mechanism is fully enclosed to meet all safety requirements.

A descriptive bulletin is available on request from Almco Incorporated, 231 E. Clark St., Albert Lea, Minn.

S. E. Helliwell Takes Charge Sales for Haynes Laboratories

C. W. Haynes Laboratories, Inc., Springfield, Mass., announces the appointment of Mr. Sidney E. Helliwell as Vice President in Charge of Sales. Mr. Helliwell has had extensive experience in the finishing field and has been with the company since 1936, as field representative in the State of Connecticut.

Power Sanding of Irregular Shapes

Designed for sanding any irregular surface or edge, a heavy-duty industrial model of contour sander has been introduced by the Sand-O-Flex Corp., 4373 Melrose Ave., Los Angeles 27, Calif.

Model 650C, which can be used on any rotating shaft, has 12 brush-backed abrasive strips which are fed out as needed from an internal cartridge. As the tool is rotated, these strips are forced into, around and over any surface or contour.

The new Sand-O-Flex is a fast action tool for sanding, removing rust, scale, tool marks, and for deglossing. The abrasive strips are 2½-in. wide, and refills come in various grits and grades, scored or unscored, in aluminum oxide and garnet cloth. Fully loaded it weighs 7½-lbs. The tool has a ¾-in. bore and mounts on a right hand or left hand shaft. It can be adapted to a flexible shaft, buffing and polishing lathe, electric motor shaft, drill press, woodworking or metalworking lathe or mandrel.

Proposed new plant under construction in south San Francisco, California, for the new Fuller-Nason Industrial Division of W. P. Fuller & Company.

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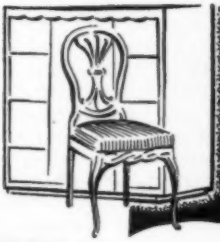
FESCO WOOD LACQUERS



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THE FULL DEPTH LACQUER FOR LASTING BEAUTY

"Special formula" Fesco Wood Lacquers produce a full depth transparent finish for maple, walnut, gum, mahogany and many other cabinet woods. The rapid dry advantages of Fesco Lacquers, coupled with the variety of beautiful effects that can be obtained by Fesco Lacquer Colors, assure the "beauty-last" economy for modern product finishing.

A Division of American-Marietta Co.

FERBERT-SCHORNDORFER CO.

CLEVELAND, OHIO

FESCO LACQUERS

New Heat-Resistant Enamels of Bright Aluminum Color

A new line of enamels that bake or air dry to a finish closely resembling brilliant aluminum has been developed by the Maas & Waldstein Co., Newark, N. J., manufacturers of specialized production finishes.

Known as "Britelume," these enamels can be used on most metals to produce a finish that's not only attractive to the eye, but also unusually resistant to heat and chemicals.

Markal Heat-Proof Paint

Protection against corrosion and scale at higher temperatures than ever before is the prime merit of the new Markal Heat-Proof Paint. It is a functional paint and will prevent hot metals from corroding and scaling at red hot temperatures as high as 1850° F. It will provide protection to metals in all weather conditions.

The hot metal can be subjected to sudden temperature changes such as quenching immediately in cold water without cracking or peeling of the paint. Markal Heat-Proof paint follows the contractions and expansions of the metal at all temperatures.

It is ideal for exhaust manifolds, furnace pipes, mufflers on trucks and tractors, etc. The paint is applied while the parts are cold. It dries in about 20 minutes and can be subjected to the red hot temperatures immediately after drying.

Emphasis is placed on the fact that this product is not merely heat-resistant, but positively heat-proof. It is made by the Markal Co., 607 N. Western Ave., Chicago.

Washes, Rinses, Dries Metal Parts

A new screw-drum type machine, announced by Optimus Equipment Co., 209 Church St., Matawan, N. J., manufacturers of metal washing machines and dryers, can be used for washing and drying metal parts, rinsing and drying them, or any part of these operations. The new machine can also be adapted for a wash-drain, rinse-drain, cold or hot air dry sequence, or for pickling operations. It is particularly designed to handle difficult rinsing and drying jobs involving screw machine or small stamped parts.

The dryer end is completely closed to avoid air loss. The air stream passes through a heater and blower which provides for either hot or cold air blast system.

Drawing Compound

The J. W. Kelley Co., Cleveland, Ohio, has developed a new product, Beacon No. 103 Drawing Compound, a non-pigmented lubricant readily removed from any work piece to be enameled or bonderized, regardless of time elapsed between die work and finishing. It is applied by brush or dip, may be cut to proper consistency with water, and contains no mineral oils. A mild alkali cleaner, emulsified solvent or degreaser, completely removes Beacon No. 103. Longer die life and less rejection for scratching, breakage or scoring, follows use of this new drawing compound.

Packaging Exposition, April 8 to 11

The 17th annual AMA Packaging Exposition will be held at Convention Hall, Philadelphia, April 8 to 11.

Just the right material for your postwar finish!

Here's just the material for your post-war product finish . . . a tough piece of goods that will stand up under the most severe conditions. Protects as no ordinary lacquer will do! It produces a splendid transparent finish of full depth on maple, walnut, gum, mahogany and other cabinet woods. Available in either the clear Gloss Rubbing or the Satin Finish. Economical; gives plenty of coverage; dries quickly. Mar Proof Lacquer Sealer is recommended with it for the first coater.

Cannot be marred or scratched — just thumb nail it; try to scratch or mar it.

Send for FREE WORKING SAMPLES

A Schaefer Mar Proof Lacquer finish will give you the best start in this most critical period. Use this tough mar proof lacquer, and obtain satisfaction right away. Working samples furnished without obligation. Write for them!

THE SCHAEFER VARNISH COMPANY, INC.
Louisville, Kentucky

MAR PROOF LACQUER

Booklets Catalogs Circulars

"Focused Research"

Bearing the above title is an interesting and colorfully illustrated booklet published by the Cook Paint & Varnish Co., Kansas City, Mo. Page sizes are 8½x11-in. with covers and pages secured in a red plastic tubular binding.

Black Coatings Bulletin Free

A comprehensive 20-page bulletin dealing with the properties and application of the complete line of black coatings is offered by the Hilo Varnish Corp. Described are enamels, air dry and baking synthetics, japans, lacquers, crystal and Rip-pl finishes. Copy of the bulletin may be obtained on request to the company at 55 Stewart Ave., Brooklyn 6, N. Y.

Booklet About Rubber

A new 28-page booklet on "Typical Examples of Development in Rubber and Koroseal" has been issued by The B. F. Goodrich Co., Akron, Ohio, and is now available upon request. The booklet reproduces 26 of the company's case history advertisements during recent months which stress the part played by research and development in solving problems for customers.

Air Filter Book Free

A new 23-page illustrated booklet compiled by American Air Filter Co., Inc., 215 Central Ave., Louisville 8, Ky., discusses various types of industrial dust problems and typical applications of AAF air filters to such problems. A chart of size and characteristics of air-borne solids and sections dealing with atmospheric dust is included; also filtered air for industrial air conditioning and ventilation, drying operations, product finishing, control of bacteria and mold spores, cooling electrical equipment, engines and compressors and miscellaneous industrial applications.

Issued free upon request by American Filter Co.

New Technical Service Data Sheets

New technical service data sheets, offered by American Chemical Paint Co., Ambler, Penna., reveal information about a number of interesting products. One describes "Kemeck," a heat-resisting paint which will protect hot metal surfaces at heats up to and above 600° F. Another tells about "Alodine" a rapid non-electrolytic process to produce a protective, skin-like coating on aluminum and its alloys.

How To Stop Fires Quickly

The appalling loss by fire of an estimated 11,000 human lives, and over half a billion dollars in property damage during 1946, indicates an urgent need for a better understanding of how to stop incipient fires at the start, for most big fires were small fires in the beginning.

As a public service, and in the interest of reducing these enormous losses, the American-LaFrance-Foamite Corp., Elmira, N. Y., world's oldest manufacturer of fire-fighting equipment, has just published a 24-page illustrated book entitled "What You Should Know About Modern Fire-Fighting Devices," and offers it free of charge to those who will write for it.

Free Book on Emulsions

A new edition of its famous book on Emulsions is offered by Carbide and Carbon Chemicals Corp., a unit of Union Carbide and Carbon Corp. The 72-page book presents over 113 practical formulas and methods for preparing cosmetic and industrial emulsions of oils, waxes, fats, and greases. Extensive additions and revisions have been made to the material given in previous editions, including description of the uses of "Tergitol" wetting agents, "Carbowax" polyethylene glycol emollients, and "Cellosize" hydroxyethyl cellulose thickener in new emulsion formulas. The book also describes the use of

STILL ANOTHER RANDOLPH ACHIEVEMENT!

Durable light-proof wood lacquer for interior and exterior use.

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many of the recently developed amine soaps and cationic dispersants which have become commercially popular as emulsifying agents. Copies may be obtained without charge from any district sales office of Carbide and Carbon Chemicals Corp. or from its principal office at 30 East 42nd St., New York 17, N. Y.

Water Heat Control Catalog

A new 16-page Catalog No. 3035 is announced by The Powers Regulator Co., 2720 Greenview Ave., Chicago 14, Ill. Thermostatic regulators and other devices for use in water-temperature control are included.

Paint Spray Hose

Describing its hose for paint spray service and the merits of its construction in handling oil, paints, lacquers, varnish thinners and synthetic enamels, as well as essential data, a new catalog leaflet on the subject has been been issued by The B. F. Goodrich Co., Akron, Ohio, and is now available upon request.

Infra-Red Information

A wealth of factual information, with illustrations showing a variety of practical applications of infra-red heat setups for drying freshly painted products is contained in a 12-page bulletin, "Infra-Red Parade," published by The Fostoria Pressed Steel Corp., Fostoria, Ohio. Conveyorized tunnels and portable setups for spot baking, are also shown.

Rubber Buckets and Dippers for Handling Acids

A new 4-page catalog section on its Flexite rubber pouring buckets and dippers, used for the safe and economical handling of acids, corrosives, liquid explosives and many other highly active liquids has been published by The B. F. Goodrich Co., Akron, Ohio.

Range of applications and instructions on usage are included in the catalog section. The pouring buckets are made in flexible and semi-flexible types, and the dipper is of a semi-flexible rubber compound. Hard rubber funnels made by the company also are described.

New Bulletin on "R-9" Rust Preventive Liquid

Rust-Oleum Corp., Evanston, Ill., has recently issued a new descriptive bulletin on R-9, its modern new liquid rust preventive. Designed specifically as a protective coating for safeguarding highly finished metal surfaces against rusting when in storage, indoors or out, or under any rust producing conditions.

Listed on the bulletin's back page is a convenient 10-point check list that outlines R-9's time and money-saving merits. Prices and full information furnished by writing Rust-Oleum, 2425 Oakton St., Evanston, Ill.

Assistant Sales Manager of A. C. Horn Co. Dies

Mr. Nathan R. Leyden died Feb. 14, 1947 of coronary thrombosis. He was assistant sales manager of the Industrial Division of the A. C. Horn Co., Division of Sun Chemical Corp.

William V. Bush, President of Detroit Sheet Metal Works

At a recent meeting of Directors of the Detroit Sheet Metal Works, Detroit, Mich., Mr. William V. Bush was unanimously elected President,

Wm. V. Bush is now president of Detroit Sheet Metal Works at Detroit, Mich.

and Mr. Walter V. Baker, Vice President. Mr. Bush has been active in the management of the organization for 30 years.

Mr. Walter V. Baker is the eldest son of the late president, Mr. Wedworth V. Baker. He recently returned from service in the United States Army, carrying the rank of Major.

Both of these gentlemen report a good outlook for the year 1947.

I. C. D. FORMULA NINE

NON-INFLAMMABLE
« *wax free* REMOVER »

for paint, varnish, lacquer, baked enamel, adhesives

EASY TO APPLY—NO AFTER CLEANING

I. C. D. FORMULA 9 is the standard of safety and quality . . can be sprayed or brushed . . doesn't raise grain nor discolor . . quickly removes all kinds of finishes and coatings from any surface or material . . costs less to use . . saves time, labor and material.

BRUSH CLEANER I. C. D. — Non-inflammable brush cleaner works fast . . does not injure nor loosen the bristles. Easy to use . . leaves the bristles clean as a whistle. Order a gallon can and convince yourself.

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Industrial FINISHING

Distributed Monthly to finishing room and paint shop foremen, production superintendents and company officials of metal-working, woodworking and miscellaneous industrial plants where production cleaning and finishing are major operations in parts and products manufacture.

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Editorial

Check Your Costs, Products and Prices

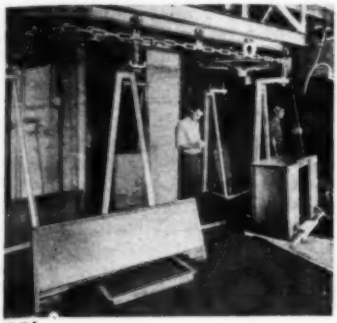
A lot of changes and some new elements have entered into the costs of operating a manufacturing business. Most manufacturers are going to have to make new and searching analyses of their costs —all of their costs—to avoid being wrong in the prices they quote for their finished products. To offset to some extent the higher costs of raw materials, supplies, labor, management, taxes, transportation and maintenance, improved cost-reducing methods and equipment offer certain tangible and practical relief—when chosen and used wisely. Labor-saving, time-saving equipment pays for itself when there is volume production on profitable items. Volume production can only be attained and maintained profitably when desirable products of modern design, and with an attractive and enduring finish, are offered at fair prices. It is something to think about.

Dun & Bradstreet reports that manufacturing failures outnumbered wholesale and retail failures in 1946—the first time in the history of American business. Business failures always increase in post-war years and are always more numerous under normal competitive conditions according to D & B—so now is the time to make a searching analysis of your costs. It may be a case of self preservation.

Finishes that Look Like Leather

A number of individuals and concerns have become interested in finishes that simulate genuine leather. Some want to use this finish for small radio cabinets. Others are interested in using it on various novelty items and on parts of furniture. A solid blond color or a blond that is mottled or grained in light tan or brown seems to be popular.

Several different methods of producing such an effect are avail-



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Because the savings effected through increased production, more orderly methods, fewer rejects and higher quality products more than pays for the average installation within 6 to 18 months.

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SPRUANCE QUALITY

able. The use of decals is one. Use of graining rollers is another. And while graining and decals are being mentioned there are graining papers and grained lacquer or plastic film which can be applied over wood surfaces. These coatings can give an excellent imitation of leather, but they usually require a clear protective top coating as a final finish.

One of our expert finisher friends has produced a leather effect finish by using a heavy spatter paint. We understand that he is using a relatively high pressure at the container, but a low pressure at the spray gun, and a large opening nozzle or no nozzle at all.

Some concerns are purchasing rolls of leatherette or synthetic leather and cementing this on the exterior surfaces of small wood cabinets and other wood products.

Finding a Man in Factory Quickly

When a key man in management leaves his accustomed desk or office or station to attend to something in another part of the plant, it used to be the practice to send a messenger to locate him, in case an important call or caller required immediate attention.

Most large establishments are now equipped with automatic call systems—either a public address or one in which key men are assigned a call number by means of which they are notified to call the office telephone operator who, in turn, gives them the message.

Of course such systems have no place in the small plant. However, even in the smallest organization, there is no excuse for inefficient

methods. There are inexpesive intercommunicating systems consisting of a master set located in the office, and one or more stations located at strategic points in the plant. The voice of the caller is amplified, and direct conversation may be carried on between the office and the person wanted.

Size and layout of the plant will determine how many stations are required. A station located in the fabricating department, or the finishing room, or the packing and shipping department may not only prove convenient in quickly locating the manager, or the foreman, but in obtaining quick information on orders or shipments for telephone inquiries. Many valuable man hours are saved by these systems. Why isn't every plant so equipped? There are many different systems on the market, and there is one large or small enough to fit your needs.

Face the Facts of Price Resistance

★ During the late war, makers of civilian goods learned not to concern themselves too much with costs. Since civilian goods were in short supply, and in most cases prices were going up, the manufacturer knew he had a ready market for all he could make. At the end of the war a tremendous demand appeared for civilian

---

★ Guest Editorial . . . Many readers can write an excellent editorial — two or three paragraphs that present a timely suggestion or valuable idea which will stimulate real thought on a live subject. The Editor welcomes guest editorials and pays for those that are published.

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YOURS on request — Manual explaining fully the Taber Method and the reasons why it pays to pre-test. (Also included — brochure on stiffness and resilience testing with the Taber V-5 Stiffness Gauge.)

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PULMOSAN R-150
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Neutralizes harmful paint, enamel and lacquer fumes. Effortless breathing. Light in weight. Durable, plated metal body adjustable to fit any facial contours. Rubber face cushion, knitted covers, head straps fit comfortably. Order several and be convinced. Prices on request.

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goods, but materials were still short in supply and labor costs were rising. Further, strikes and labor unrest greatly slowed down production. Then price controls were lifted. The net effect was that most consumer goods remained scarce and prices kept going up. Cost-saving was lost sight of.

Today the picture is different. Resistance to high prices has developed. In some cases price concessions have been made. There is even talk that makers of certain products have priced themselves out of the market. The peak in many prices has been reached, and I believe that we may now expect a leveling off and perhaps a slight decline.

What does this mean to the manufacturer? In many cases his raw materials are still rising in price. He must begin to watch his costs closer. He must make his merchandise more attractive so as to sell it readily on a buyer's market. If he makes a product that is to be finished he must pay more attention to the quality of the finish, and cut his finishing costs if possible.

The foreman finisher should look for ways to increase output per man by means of conveyors, ovens, and new methods of finishing. That is the only way finishing costs can be lowered without sacrifice of quality.—D. BLACK.

Foremanship Calls for Leadership

★ The foreman in a finishing room is a key member of the production staff. To his company he is responsible for quality finishing of its products on a definite time schedule. To the men in his

department he represents the company. The attitude of workmen toward him usually determines their attitude toward the company. The character and personality of the foreman are important assets or liabilities of the company.

A foreman finisher should thoroughly understand each job in the department, and have a clear knowledge of the finishing process. Then he is competent to instruct new workmen and to see that the entire job of finishing in his department is done right. But it takes far more than this to make a good foreman.

A good foreman should be, as the name implies, a leader of men. Two important qualities necessary for leadership are enthusiasm and initiative. No man will follow another who does not have these qualities. The man who loves his job and works hard at it has no trouble in commanding the respect of those around him, whether he is the boss or not.

But most important of all, a good foreman, as any leader, must have character. He must keep his promises, be just, and have tact. No man who is unable to inspire the trust and confidence of those around him can be a good leader.

Batenburg to Manage Paint Advertising for P. P. G. Co.

Appointment of Michael J. Batenburg as manager of paint advertising for the Pittsburgh Plate Glass Co. is announced by E. D. Griffin, vice president in charge of the firm's paint division. He succeeds Edward J. Allee who served as manager for a 27-year-period, until his death last December.

Mr. Batenburg has been associated with Pittsburgh Plate since 1939. He joined the firm's paint division as an industrial sales representative at Chicago and later served in the St. Louis territory. He has been manager of sales service for the paint division with headquarters in Pittsburgh during the past six years.

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Also Manufacturers of a complete line of waterwash and dry type paint spray booths with accessories. *Send for details.*

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Speed Up Your FINISHING PRODUCTION LINE with this Soft Tacky Cloth

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Random Comment on the Industrial Scene

(Continued from page 11)

The Chicago market, being one of the first of the large markets, probably received the worst blow. Buyers walked and looked and then some of them became disgusted and went home.

In New York, one of the surest signs of a return to a buyers market was the traditional absence of local buyers on opening day. In January 1946, a record attendance of 5200 was made. This year the attendance on opening day was 4412. According to Jack Melniker, vice president of the New York Furniture Exchange, "The overwhelming bulk of retail. representatives were from out-of-town." This is the first time the local buyers have not descended on the market on opening day since 1941. Traditionally it is a sign. Looks like we are getting back to normal.

* * *

Standardization seems to be creeping into bedroom and living room suites. We have had planned kitchens wherein standardized cabinets and utilities just seem to drop into place. Now this new line of extremely simply, practical and modern furniture designed by Morris Sanders, and manufactured by the Mengel Company, Louisville, Ky., may do the same thing for other rooms. Each piece is built on a 6-in. module. All pieces are in multiples of 6-in. and are interchangeable. Various size base frames are available on which the home owner may place cabinets, drawer sections, etc., to fit space and requirements. All pieces are finished in natural mahogany. To

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Write for information and quotations.
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set it up all you need is a screwdriver or, lacking that, a 25-cent piece will do.

The idea seems to be popular with buyers who like to adapt the size of their furniture to room sizes, and especially those who like to change their furniture around frequently.

* * *

What of Tomorrow?—"Distribution is the major problem of the postwar period." So said Arthur D. Whiteside, president of Dun & Bradstreet to the Collateral Group of the National Association of Wool Manufacturers. To elaborate, he continued: "Unless planned selling is used to improve distribution, manufacturers cannot expect to market goods successfully." These are stable truths, and it should be borne in mind that past sales policies and experience cannot be relied upon too much. It is estimated that more than 63 million people in the United States have had no previous experience from an adult standpoint in a free trade market for consumer goods.

Fundamentally they are human beings with the same desires as countless others who "grew up" under less strenuous and more peaceful conditions in a world which expected and received less than the present. But what will be their reaction to styles, designs, customer relations and sales policies of a past decade?

Regardless of what you manufacture, do not take yesterday's children for granted.

Install NALCO
Infra-Red Lamps in
Your Drying Units
Time tested—job tried, Nalco infra-red lamps have proven highly efficient and long-lasting for all types of drying, baking or heating installations . . self reflecting or clear glass type.
Send for "Drying Problems Made Easy"
North American Elec. Lamp Co.
1030 Tyler St. St. Louis 6, Mo.

* * *

New Materials for furniture are being used. Wrought iron and cast aluminum are being shown. The upholstery is bright and metal frames are painted. A feature of this furniture is the knock-down construction which makes for ease of storing and shipping. It can be assembled according to simple instructions.

Exhibited for the first time at the Chicago market, was an all-plastic 5-piece dinette set to re-

SAN-ITAI-RIE
CRACK AND CREVICE FILLER
OLD FRIENDS ARE BEST!
Three generations of wood finishers have used SAN-ITAI-RIE FILLER. It still is best for all defects in wood.
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We Design, Engineer and Manufacture
CONVEYOR SYSTEMS, MATERIAL HANDLING EQUIPMENT, SPECIAL MACHINERY, LABOR SAVING DEVICES
Also Consulting Service for
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Winston-Salem, N. C.

tail for $129. No quotas were set, as buyers were agreed that the quality was satisfactory but the price made them cautious.

Wood has been the conventional furniture material for ages. Perhaps this is so because for constant daily use furniture built out of other materials has not offered sufficient in beauty, comfort and utility to warrant a substitution. Yet we cannot ignore the so-called substitute materials. There was a time when a few skeptics thought the broom would never be replaced by the vacuum cleaner, and the ice-box by the electric refrigerator. But they were wrong.

* * *

A World's Fair is planned for St. Louis in 1953 to memorialize the sesquicentennial anniversary of the Louisiana Purchase. The last fair in that city was in 1904. Tentative plans for the coming exposition call for decentralization, that is several locations along the river front, the Art Museum, and perhaps the parks and botanics' gardens.

Who knows? By 1953, atomic energy, electronics, radar and supersonic waves, not to mention television in technicolor may all combine to make it really worth while to go to the Fair. What a display of gadgets that should be.

* * *

Quality Goods Demanded—Manufacturers' inventories are continuing to grow but the trend and emphasis is on cleaning out inferior goods and stocking up with quality merchandise. The finisher must realize that quality finishing is a requirement these days.

J. T. Campbell, New Manager Technical Paint Products Co.

The Technical Paint Products Co. of New York City announces the appointment of James T. Campbell as its new General Manager. Mr. Campbell's name is one well known to the paint and hardware trade.

A good portion of Mr. Campbell's efforts in his new capacity will be devoted to the field of industrial finishes. In this connection, the Technical Paint Products Co.'s field salesmen, who call regularly on industrial accounts in the metropolitan and adjacent areas, will work in close conjunction with him.

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★ Whether hand cut or photographic silk screen plates are best suited to your type of work, you'll find NAZ-DAR a reliable and economical source of supply.

SILK SCREEN is the MODERN method of applying decorative designs, lettering and trade marks, because it provides absolute UNIFORMITY, SHARP DETAIL, SPEED and LOW COST. You can apply on any surface.

We maintain a complete service for the trade and can supply you with any type of Silk Screen Plate needed, as well as Silk Screen Inks, Lacquers, Squeegees, Decalcomania Paper, Frames, Cutters and accessories.

All production men should investigate the application of Silk Screen Stencils to their production problems.

★ *Write Department IF3 for information or copy of new catalog No. 24.*

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Charles J. Missack, 50 Years With Keystone Varnish Co.

Charles J. Missack, industrial sales manager, of the Keystone Varnish Co., Brooklyn, N. Y., has been presented a cash award by D. C. Arnold,

Chas. J. Missack industrial sales manager of the Keystone Varnish Co., Brooklyn.

president of Keystone, as a mark of the company's appreciation of his 50 consecutive years of faithful service.

When Mr. Missack began his career with Keystone in 1897, he was a bookkeeper; however, after five years, he transferred to the sales department, where he's been ever since. During the past 45 years, he has specialized in the sale of industrial paints, varnishes, and enamels to the furniture, hospital equipment, and allied trades. Because of his many years of experience, he is recognized as an authority on industrial finishing.

—Job Painting and Finishing—

Specialists in Applying Quality Finishes on Parts, Products and Complete Units for Leading Manufacturers.

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Solvent and Worker Safety

SAFETY EQUIPMENT provided for protection against volatile solvents requires regular inspection, if solvent illness and dermatitis are to be avoided. Such equipment may become ineffective through deterioration or improper handling.

Ventilating equipment, which provides basic protection against solvent vapors, may become inefficient because of an accumulation of dirt in pipes or blades, and should be cleaned regularly. Fans and other moving parts should be inspected to see that they are in good working order, and are "pulling" the proper amount of air. This is especially important at the beginning of the winter season, when the partial ventilation afforded by open windows during the warmer months is no longer available.

In addition to inspection of ventilating equipment, provision should be made for analysis of the vapor content of the workroom air, to be certain that it is being kept relatively free of contamination. This may be done by a competent chemist or industrial hygienist. Many states provide such service through their health or labor divisions.

Where gas masks are used, it is essential that canisters and cart-

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CLEVELAND 4, OHIO

ridges be replaced as soon as they are depleted. The time record on canisters should be checked regularly. In addition, these masks should be tested to make certain that no odor penetrates. This may be done by having an employee who is familiar with the odor of the solvent adjust the mask, then breathe through it close to the opening of a container of the liquid.

The face mask of all respirators should be regularly examined for cleanliness and also signs of wear, since a good canister provides no protection for a mask that permits leaks. Air lines and hose lines on respirators should be carefully examined before use.

Protective clothing should be examined for cracks or tears. Pinholes in rubber or plastic gloves may be detected either by filling the gloves with water and watching the outsides for leaks, or by wetting the outsides of the gloves, inflating, and watching for the appearance of air bubbles on the wet surface.—SAFETY RESEARCH INSTITUTE

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Freelance striping or graining on furniture and novelties. JOSEPH PIKE, 591 Halsey St., Brooklyn 33, N. Y.

POSITION WANTED.

Lacquer Chemist with 9 years' experience, development and plant management, desires position. Prefer technical sales or management. Age 32. Married. Address IF-375, care Industrial Finishing.

FOREMAN WANTED.

Finishing department of large furniture manufacturing plant; experienced in maple and oak furniture; excellent opportunity; Metropolitan Northern New Jersey area. Address IF-377, care Industrial Finishing.

Paint Overspray
We will purchase and/or have reclaimed paint overspray from water curtained spray booths. Any type paint, enamel or lacquer is acceptable.
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MIRACLE

5 Gallon BLUE BOY Model

PAINT REJUVENATOR

Restores Paints, Lacquers, Enamel Products and Pigment Primers, to original consistency in 3 to 10 minutes without opening the can. Available for Round or Square 5-gallon cans. Explosion proof electrical equipment if desired. Also other units from ¼-pint to 50-gallon drum capacity available. Originators of Paint Rejuvenating Equipment—ten years—thousands of satisfied users.

Miracle Paint Rejuvenator Co.
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It is now possible to obtain the services of a thoroughly competent wood finishing consultant with twenty-seven years of experience in practical wood finishing and laboratory experience. Capable of handling and training men for the job. Working independently of all paint or finishing material manufacturers. With a thorough knowledge of modern methods and materials. If you have a problem, an appointment can be arranged for a personal interview. Write, phone or telegraph. IF-376, Industrial Finishing.

FINISHING FOREMAN WANTED.

Excellent opportunity in New York City plant, for top man fully experienced in mass production finishing of wood cabinets and case goods. Must be qualified in all phases of finishing, spraying, rubbing, from A to Z, and finishing repairs; know how to handle men, corelate work of men and subforemen and get work out on a production basis. Write full details in first letter, of past employment and experience, age, salary desired, etc. All replies held strictly confidential. MT 901, FINNERAN, 1475 Broadway, New York, N. Y.

—WANTED—

1 SUPERINTENDENT AND 1 WORKING FOREMAN IN PAINT DEPARTMENT

We are manufacturers of metal furniture with factory located in Detroit area. Above positions will be available around August 15th. Approximately 25 employees in paint department. Knowledge of graining on steel sheets as well as paint-mixing desirable and must be accustomed to producing high quality finishes. Excellent opportunity for right men to grow with us. Salary and bonus arrangement. State qualifications. Address IF-373, care Industrial Finishing.

COATING FOREMAN.

Experienced Foreman for Paper Coating Department of long-established manufacturer located upper New York state. Must have working knowledge of lacquers and other finishes and their application to paper by both continuous roll coating and spray coating. Splendid opportunity for right man. Give complete information in first letter as to age, experience and salary expected. Address IF-374, care Industrial Finishing.

SALESMAN WANTED.

Splendid opportunity for young aggressive industrial salesman to connect with highly successful rapidly growing manufacturer of complete line Industrial Finishes. Illinois or adjacent territory. Generous commission arrangement. Only highest type men apply. All communications confidential. Address IF-375, care Industrial Finishing.

SALESMAN WANTED.

Excellent future in Chicago for a young man with some knowledge of use and application of industrial lacquer and enamel. AMERICAN PAINT CO., 902 N. Larrabee St., Chicago 10.

SPRAY BOOTH WANTED.

Water-wash spray booth approximately 10-ft. wide, 8-ft. deep. Fan about 16,000 cubic feet pr minute. Write complete specifications to S. G. ADAMS CO., 2933 Delmar Blvd., St. Louis 3, Mo.

STOPWATCHES.

7 jewel. Used but perfect. Rare bargain at $10, check with order. Money back guarantee. Use for viscosity. GENERAL TEST EQUIPMENT CO., 38 Argyle, Buffalo 9, N. Y.

FOR SALE

10 55-gallon drums Chrome Yellow High Gloss Lacquer. 10 55-gallon drums Chrome Light Green High Gloss Lacquer. For immediate disposal. Excellent condition. $2.50 per gallon. RAND CHEMICAL PRODUCTS, 2335 S. Michigan Ave., Chicago 16, Ill. Phone Calumet 2866.

FOR SALE.

10 55-gallon drums white baking primer. 300 gallons assorted colors baking enamel in 5-gallon cans. 11 55-gallon drums assorted colors baking enamel. All best known brands. LENNOX METAL MFG. CO., INC., 63-02 59th Ave., Maspeth, L. I., N. Y. Phone HAvemeyer 8-2576.

FOR SALE.

Fostoria Infra-red 40-foot oven. Wired for 375 watt bulbs. New 1944. Also double conveyor for same. KEEN EQUIPMENT CO., Vineland, N. J.

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